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Value Based Selling of Remote Services

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PREFACE

This study was initiated by the team responsible for the development of long term service agreements. Advanced services, such as remote diagnostic services, are essential components of the service agreements, but are difficult to sell and include into the current system packages. This study made an attempt to improve the sales of the advanced services in the early stage of the system delivery to cruise ships.

The biggest challenge and a gap in the study was that a wide enough range of customers sufficient to address this topic in-depths were not available for the interviews within the short time period available. Another challenge was that, in the beginning of the study, the firm direction to approach the target was yet missing, and it was established later on when the value based selling was selected as the key approach. But the study itself was interesting and I learned value based selling and characteristics of the service in a product business really thoroughly.

This topic was also deeply relevant to my interests because I have 15 years of experience in the cruise industry, and by now have held several positions covering various areas such as on-site operations, management and business development, with the current focus on the global service sales to cruise and ferry segment. Therefore, I was lucky to have access to the people with extensive experience from the cruise industry and the high positions in product and service sales. The proposals for improvements are based on my personal experience as well as their insights.

I want to thank Dr Juha Haimala for his guiding me through the value based selling theory and for his help that he made available to me. At the end I would like to give special thanks for Zinaida Grabovskaia for her advice in constructing the study report.

Teemu Pajala
Helsinki, 07 May 2014

ABSTRACT

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The objective of this study is to propose suggestions for internal cooperation and external and internal value propositions for the Remote Diagnostic Services offered by a global company. The case company in the study is a major manufacturer of electrical products and systems operating globally, and the unit of the study a Marine Unit in this company. An additional issue to address is the cooperation between the product sales and service sales units, with the purpose to allow installation of service enablers in the early stage of the product delivery.

The study is conducted for the case company to suggest a solution for the current business problem, though the customers were not involved in the study. This approach was chosen on purpose since a wide enough range of customers was not available to address the topic in-depths, therefore the study concentrated on gathering the vies from inside the company, from the key stakeholders in the service sales. The study approach was to have a review of literature first, concentrated on the value based selling and remote services, as well as a relationship between the product and service sales. The interviews and data collection was gathered from carefully selected people with long experience in the marine industry in several companies before joining the case company.

The study applies qualitative research methods and limited to the value propositions as statements and descriptions, rather than monetary values, due to the limited quantitative data available. The output of the study is the value propositions to promote the sales of the remote services to the cruise industry and internally in the case company. The value propositions are developed to be used in the product sales and service sales departments of the case company in order to enhance sales of the remote service solutions.

Keywords	Value-based selling, Remote Diagnostics, Condition Monitoring, Service

TIIVISTELMÄ

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Tämän tutkimuksen tavoite on ehdottaa sisäisiä ja ulkoisia arvolauseita etädiagnostiikkaa varten. Toinen tutkimuksen alue on yhteistyö tuotemyynnin ja huoltomyynnin välillä, jotta etädiagnostiikan vaatimat komponentit saadaan asennettua tuotetoimituksen aikaisessa vaiheessa.

Tutkimus on tehty kohdeyrityksessä ja asiakkaita ei ole ollut mukana tutkimuksessa. Haastattelut ja tiedon keruu on tehty tarkkaan valituilta ihmisiltä, joilla on pitkä kokemus meriteollisuudesta useista yrityksistä ennen siirtymistä kohdeyrityksen palvelukseen.

Tutkimus on laadullinen ja rajattu arvolauseisiin, ilman arvojen rahallista määrittelyä, koska numeraalista tietoa ei ollut käytettävissä.

Tutkimus on tehty kappaleissa, joista ensimmäinen esittelee tutkimusalueen, toinen esittelee aiheeseen liittyvän teorian, kolmas esittelee tiedonkeruun haastatteluilla, neljäs esittelee tiedon analysoinnin suhteessa teoreettiseen viitekehykseen, viides esittelee ehdotukset kohdeyritykselle, jotta tutkimuksen tulokset saadaan käyttöön.

Tutkimuksen tulos on arvolausekkeet myynnin käyttöön etädiagnostiikan myyntiin risteilijämarkkinoilla, sekä sisäisesti kohdeyrityksessä. Arvolausekkeet on kehitetty käytettäväksi tuotemyynnissä ja huoltomyynnissä tehostamaan etädiagnostiikan myyntiä.

Keywords	Value-based selling, Remote Diagnostics, Condition Monitoring, Service

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ABBREVIATIONS

RDS	Remote Diagnostic Service
CM	Condition Monitoring
DNV	Det Norske Veritas, Classification Society
D4Azipod	Remote Diagnostic Solution for Azipod system
D4Drilling	Remote Diagnostics Solution for drilling systems used on oil exploration
D4Switchboard	Remote Diagnostics Solution for electrical distribution systems
D4Machines	Condition Monitoring Solution for rotating machines
MachSense	Condition monitoring method for rotating machinery

1 INTRODUCTION

This study is conducted to recognize the values for different stakeholders in the delivery chain of remote services from the product delivery to the vessel operator. The study is based on service, remote services and value based selling theories applied to the case company context. The main focus is on the total value created for the end user of the system delivery, the operator of the vessel. The value chain inside the case company is considered as an additional value item. This study is undertaken due to the need recognize the value for stakeholders and to make sales of advanced services attractive at the product sales phase.

The study is divided into six sections, where the first section is the introduction of the business problem and objective of the study, the second section describes the method and material used, the third section is a review of the theory from various literature sources, the fourth section introduces the case company and discusses the services in focus of the study based on the results of the current state analyses, the fifth section presents the study results and outcomes, and the sixth section proposes a value model and recommendations.

1.1 Case Company

The case company of this study operates in the field of power and automation technologies. The company is divided into Business Units (BU) responsible for industrial areas. The unit of this study is the Business Unit responsible for the marine segment of the case company's business. The Marine Business Unit is divided into Local System Units and Global Service Unit. The Local System units are Oil & Gas Unit and Cruise & Ferry Unit. The system units are responsible for sales and delivery of new products to the customers such as ship yards, while the service unit is responsible for after sales services to the vessel owners and operators. The service unit of the case company provides Remote Diagnostic Service (RDS) and integrated Condition Monitoring Service (CMS) for the vessel operators, in all the fields of the marine industry.

1.2 Business Problem and the Objective of the Study

The business issue of this study is that the case company is selling mainly transactional services in a growing competition, and it needs to extend its offering to Remote Diagnostic Services. However, presently these services cannot be sold due to the lack of solution enablers delivered by the system sales. This makes an important issue because the business impact of this lack is that the delivered products do not allow for the utilization of remote services and installation during the operation, since at this stage they are really expensive.

Given this, the objective of this study is to propose improvements for internal cooperation and external and internal value propositions for the Remote Diagnostic Services. This should help the organization to improve its operational support during the warranty period and to sell the advanced service solutions during the life time of the vessel.

1.3 Study Approach, Scope and Limitations

The study is made to define the values and sacrifices the customer and the supplier experience in utilizing and sales of the Remote Services. The research approach in this study is a single case study and the type of the case study is *Intrinsic*. This study method is useful for the projects where the researcher has genuine interest to understand the case and its context, but there is no other case or need to illustrate a particular trait or problem, as described by Baxter et al. (2008: 548). In the Intrinsic type of the case study, the case itself is interesting and rooted in the context, and there is no need to develop an abstract construct or phenomenon. (Baxter et al. 2008: 548)

The output of the study is the value propositions to promote the sales of the remote services to the cruise industry and internally in the case company. The value propositions are developed to be used in the product sales and service sales departments and enhance the sales of the remote service solutions.

The study concentrates on the Remote Services in an electrical part of the system delivery. The industrial field studied is the Cruise ship industry and benchmarking to other industries is not used, except for the interview with the Product Manager presenting the Oil & Gas Unit. The other industries, such as the oil and gas as an offshore industry, are not included in the study due to a different nature of the business and customers in

those industries. In the cruise industry, a risk management is based on utilizing redundant systems, while in the oil and gas industry the risk management is based on avoidance of failures and reduced downtime. In the cruise industry, the downtime cost is considerably lower than in the oil and gas industry, which prevents benchmarking between the industries due to different value setting and value recognition.

The study employs qualitative research methods and is limited to the value propositions as statements, rather than monetary values, due to the limited quantitative data available.

This study is made in the case company and the customers were not involved in the study. The interviews and data collection are made from the carefully selected circle of people with long experience in the marine industry in several companies before joining the case company.

2 METHOD AND MATERIAL

This section clarifies the study method used in the study. First, it describes the study design and the research process; secondly, it introduces the data collection methods and thirdly, it explains the analysis methods for the interview data.

2.1 Research Design and Process

The study is designed to follow a liner structure of research steps where, first, the problem is defined and the study design is developed; secondly, the related theory is collected; thirdly, data is collected and analyzed; fourthly, the proposal is constructed and validated, and fifthly, the final proposal is presented.

Figure 1 below illustrates the research process in this study.

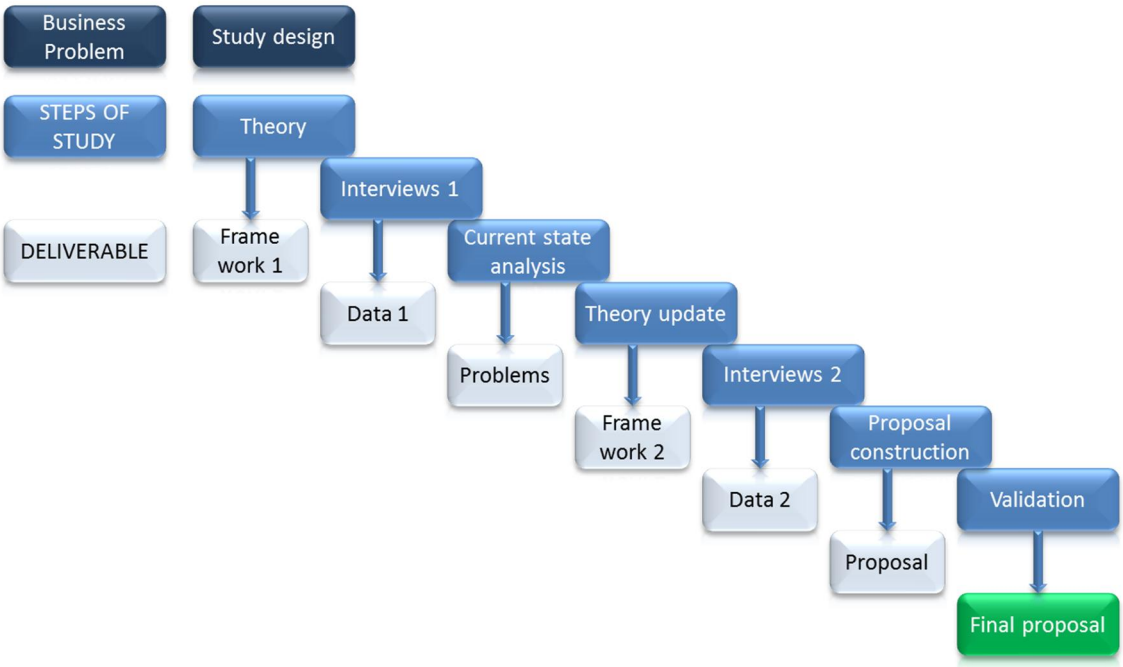

Figure 1. Research process in this study.

As illustrated in Figure 1, the research process in the study starts with identifying and defining the business problem, and describing the study design. In order to find reliable and valid answers in the context of the business problem, the relevant literature is reviewed to construct the first version for the theoretical framework. The literature re-

viewed is related to the services in product based business, value based selling and remote diagnostic services. Based on the theoretical framework, a questionnaire is constructed for the interviews.

The data collection starts in the first round of interviews used to define the current state in the case company. The data from the first round of interviews is analyzed from the point of view of the described theory and the constructed framework. The theoretical section is updated based on the needs identified in the current state analysis, and the framework is developed to produce the final version of the proposal. The analysis and results from the first round of data collection and the developed framework are applied in the interviews with relevant people to collect the second set of data.

For the theory update phase, the relevant literature is examined, especially those publications discussing, first, the relationship between the product and service sales and delivery; secondly, value based selling and customer values in services, and thirdly, the remote services.

Based on the results of the second round of data collection and analysis, the final framework is constructed as a preliminary proposal for the output of the study. The proposal is then validated with the experts in the case company and the final proposal is modified based on the comments from the validation session.

2.2 Data Collection and Analysis Methods

This sub-section discusses the data collection for the study built from the interviews as the main data collection method. First, it describes the interviews as a research method and gives the background of the interviews used in the study, and then, it explains the data collection and analysis.

2.2.1 Interview as a Research Method

"Standardized Open-Ended Interview" is a data collection method where the questions are fixed for every interviewees but the wording is made in such a way as to allow for open answers. This way the respondents can provide more information around the topic of the question. It also allows the researcher to ask probing questions to get the data needed. (Turner 2010: 756) In this interview method, the data collected in inter-

views is rich qualitative data, easily summarized around the questions to get a consistent message from the material.

Formulating questions for the interview is crucial for success of the interview. The questions should be made in a way that they open a possibility for the researcher to probe deeper in an experience and knowledge of the interviewee. Open ended question should include elements such as open ended wording, neutral non-influencing questions, only one question at a time, clear wording using terms relevant for the question and topic, and finally the question “why” should be avoided. It is crucial to construct a question in a way that the focus remains on the topic of the question, instead of the interviewees answering to reply to another question in the interview. (Turner 2010: 757-758) It is also advisable to be prepared with follow-up questions to ensure that the experience is collected from the interviewee.

For conducting qualitative interviews, selection of interviewees is important to have a credible study and should be based on the selection criteria, such as criterion based sampling or critical case sampling. The interviewees should be the persons that are open and honest to share information. The interview should be held in an environment where the interviewees feel comfortable and not restricted. (Turner 2010: 757) During the interview, the data is collected carefully and accurately.

After the interviews, the collected data have to be interpreted to make sense out of the data. The data is grouped or compiled in sections of information, often called the themes and codes. For this purpose, the data are grouped around the common phrases, expressions and ideas what the interviewees mentioned. (Turner 2010: 759) The questions are grouped on a higher level to help the collection of the data and to keep the discussion flowing instead of jumping back and forth.

In formulating the questions for the interviews and in selecting the persons to be interviewed, the decisions have to be made carefully and in respect to the business problem and the objective of the study. In this study, the selection of the interviewees was based on the persons’ experience in the functions studied and in the industry discussed.

2.2.2 Background of the Interviews

The first round of interviews was conducted using the "Standardized Open-Ended Interview" method. The fixed questions were asked as it is written in the interview document, and the probing questions were asked where the reply did not satisfy the researcher, from the input point of view. Table 1 below describes the background of the interviewees and the date, location and duration of the interview, collected in the first round of data collection, the main data.

Table 1. Background of the first round of interviews.

#	Position	Experience	Date / 2014	Location	Duration
1	Senior Service Sales Manager, Marine Service Center USA	Has been in the case company for 4 months working for the local service center in USA as a service sales manager. Earlier has been 7 years in Kone Elevators in USA, being responsible for a local Marine Service business in North America.	19th Feb	Miami, USA	2 h
2	Director, Marine Service Center USA	1 year in the case company Marine, 15 years in Wärtsilä Marine. Wärtsilä technician, engineer, part of the management team, general manager of contract management, RDS was included into contract management.	27th Feb	Miami, USA	1 h
3	Global Solution Manager of RDS, Global Marine Service, NO	5 years in the case company, in oil and gas and offshore industry Product Manager of the remote diagnostic services	3rd Mar	Bergamo, Italy	1 h
4	Vice President, Asset Management, Global Marine Service, UK	In the case company's service unit since 2001 until 2009, then in Marine Service. Member of the management team of Global Marine Service. In project management since late 1970	13th Mar	Helsinki, Finland	1 h
5	Sales Manager for Cruise, New Sales department, FI	7 years in the case company and 10 years in shipyard, a wide experience in a cruise ship industry.	27th Mar	Helsinki, Finland	1 h

#	Position	Experience	Date / 2014	Location	Duration
6	Sales Manager for Ferry, New Sales department, FI	About 25 years in the case company in the Marine industry	2nd Apr	Helsinki, Finland	1,5 h

As seen in Table 1, the backgrounds of the interviewees selected for the interviews in the first round of data collection consisted, first, from System sales persons who sell new system packages to the ship yards, secondly, from Products Manager, the person responsible for the service solution, and thirdly, from Service Sales, persons who sell diagnostic packages to the ship owners, the persons who buy and use the remote services.

Table 2 below introduces the person involved in the second round of the interviews to collect the second round of data for developing the initial proposal.

Table 2. Background of the second interviews.

#	Position	Experience	Date / 2014	Location	Duration
7	Service Development Manager, Global Marine Service, FI	Has been in the case company for 3 years, working for the service product development and responsible for service contract business. Earlier has been for 6 years in Kone Elevators in FI and UAE, being responsible for service development to specific areas.	23th Apr	Helsinki, Finland	0,5 h

As seen in Table 2, the person selected for the second round of data collection is responsible for the service product development, including service agreements. The person has been responsible for the sales and business of the long term service agreements and holds extensive experience in selling the advanced services such as the Remote Diagnostics. The interview was held as an open discussion without a predeveloped questionnaire and focused on the results from the first round of data collection, which were reviewed and discusses together with the interviewee for collecting his comments and insights.

Table 3 below introduces the persons involved in the final round of data collection which concentrated on the review of the proposed model.

Table 3. Background of the third interviews.

#	Position	Experience	Date / 2014	Location	Duration
4	Vice President, Asset Management, Global Marine Service, UK	In the case company's service unit since 2001 until 2009, then in Marine Service. Member of the management team of Global Marine Service. In project management since late 1970	29th Apr	At phone	0,5 h
2	Director, Marine Service Center USA	15 years in Wärtsilä Marine 1 year in the case company Marine Wärtsilä technician, engineer, part of the management team, general manager of contract management, RDS was included into contract management.	29th Apr	At phone	0,5 h

As seen in Table 3, the persons selected for the interviews for the final data collection round consisted from the persons in management positions working for the Service Unit. The third interview was made to review the final proposals and was held as an open discussion without a questionnaire used.

Summing up, the interviewees were selected widely from the organization to get different views and to understand the service awareness in the organization. All the interviews were conducted face-to-face and were held with the people from the functions closely related to the product sales, service sales and the studied service products.

2.2.3 Data Collection Process and Data Analysis

The first interview was conducted based on the questionnaire constructed from the theoretical framework. Appendix 2 presents a model of the interview questionnaire for the first round of data collection with the notes from one of the interviews given as an example. The questionnaire is constructed in such a way as to have, first, the questions related to the findings from the theory of the service in product based business and, secondly, to gather the data on the value based selling in the case company. The first round of interviews provided the first set of the data, which was used to understand

the current state of the value based selling in the case company and the services studied.

After the first round of interviews for Data collection 1 and obtaining the initial results from the case company's current state analysis, the theory review was continued and the Framework was updated to the one presented in the report, in Section 3.4.

All the first set of the data from the interview notes was collected into the common table for further analysis. The answers to certain questions were analyzed and a preliminary summary was constructed to get the common data from the answers into a single data display summarizing the findings. These summaries and the initial suggestions for the proposal were presented to the selected experts in the case company for preliminary validation. In the second round of interviews, this summarized vision was reviewed and the initial suggestions modified based on their comments and insights. Appendix 3 presents an example of the summarized data display as input for Data collection 2, with the Summary column presenting the categorized results from Data collection 1.

The results from the second round of data collection were used for the Proposal construction of the preliminary proposal to be reviewed in the third round of interviews. The third round of interviews, in the Validation phase, confirmed the suggested proposals with some minor modifications and led to formulating the Final proposal presented in the end of the study, in Section 6.

2.3 Validity and Reliability Plan

Validity of this study is planned to be ensured by utilizing *Internal Validity*, *Construct Validity*, *External Validity* and *Reliability* requirements and additionally by paying attention to some *Generalization* of the results, as discussed by Quinton et al. (2006: 126, 132). The plan for validity and reliability is discussed in this section and reviewed in the end of this report in the discussion on the Evaluation of the study, in Section 7.4.

Internal Validity ensures that the research has measured what was originally planned to be measured (Quinton et al. 2006: 127). This study uses qualitative research method for which Quinton et al. (2006: 127) propose to specially observe the internal validity. *Internal validity* is often seen as strength if various questions around the topic of the

research are constructed to collect enough data to cover the topic of the research properly. Therefore, an extensive questionnaire developed for the interviews in this study can be seen as a step to improve the interval validity and ensure addressing the topic of the study correctly.

Construct Validity measures validity of the theory part of the research. It considers the theory in connection to the topic of the research. (Quinton et al. 2006: 128). Construct validity ensures that the theory reviewed and used in the study is related to the actual problem and topic of the study. In this study, a wide range of the articles and books is reviewed and their relevance is ensured already at the stage of the research design. The most well-established and relevant theories found from the literature are used to build the theoretical framework for the study.

External Validity measures if and how wide the results of the research can be used in other contexts. In qualitative research, it is questionable if the *External validity* is useful. The external validity can be addressed by evaluating how well the results of the research can be transferred to another context, which is done in connection to generalization of the results. (Quinton et al. 2006: 129). In this study, the results are obtained and discussed for the remote services in one unit of the case company, but to a certain extent they may allow for the use of the results in a wider scope, for different other remote services in the case company and possibly beyond, if the context is similar to what is described in this study.

Reliability addresses the repeatability of the study, in other words, would the results of the study be obtained, if the research was made by someone else or repeated at some other point in time, as it was originally conducted. In the social context research, where people are involved, it is found difficult to replicate the research as described before. (Quinton et al. 2006: 129). Therefore, the issue of reliability needs to be specially addressed in qualitative studies. In this study, the repeatability is supported by clearly stating the business problem, the explicitly described study process, the interview method using the interview notes, and the selection criteria for the interviewed persons. Reliability is also secured by interviewing a reasonable number of people from different business areas, although from the same industry which the case company belongs to. If available, quantitative figures are collected and used to support the results from the interviews as secondary data.

Finally, *Generalization* relates to the extent where the results of the research can be applied. It measures if the results of the study can be *generalized,* for example, to the whole industry in question. In the evaluation of the generalization, the researcher must be open and honest with the scope and limitations of the research. Those must be clearly stated in the research report and evaluated honestly in order to be aware not to over *generalize* (Quinton et al. 2006: 132). In this study, the limitations and the scope are stated in the beginning and limit the generalization attempts to the specific narrow area of the topics discussed.

3 SERVICE VALUE PROPOSITION IN SYSTEM ORGANISATION

This section discusses the findings from the theory related to the service approach and creating value proposition in the context of the industry. The theory section is divided into three parts, first, it describes the service approach in a product based business, secondly, it introduces the value proposition in value based selling, thirdly, it overviews the remote services as the context for value creation in this study.

3.1 Service Approach in Product Based Business

Many companies offer services to protect and support their product business. The service sales might be seen see as a competitive advantage when competitors offer services for their products. Higher margins in service than in production can also create a pull for service level improvements. However, independent service development is challenging and can face even internal competition in the company. A simultaneous competition may even occur on both, the defensive and offensive basis between the product and service units. The internal competition can be hard and consume the organization's energy. (Auguste et al. 2006: 43-45) In such a competitive situation the strategy about the product and the service business is not clear.

Selection in the strategy is needed to clarify if the focus is on pure production or preferably in offering services. To build the service, it is another strategic decision to choose if the company see advantage in high-margin skills or in scalable volume services. (Auguste et al. 2006: 43) The strategic selection can be related to the company's customer base and classification of the customers.

This selection is to choose whether to approach service markets by taking an advantage of economies of scale or economies of skills. Decision depends on a structure of the service markets. Economies of scale call for automated transactions and high utilization of resources, while economies of skills call for knowledge and capabilities. The decision has to be done on a base of service market demand to be aligned with offering. (Auguste et al. 2006: 45) Different choices require also different actions in the strategic actions and competence management of the company.

Companies in skills based business have to have good coordination of service specialists and service sales. Whereas the specialists often identify the needs of their custom-

ers' when being on sites, the service sales require to have nearly same amount of credibility. (Auguste et al. 2006: 49) Thus, the skills of the sales people should be defined in the competence plans.

As always in business, long term competence planning needs to be aligned with the strategy. The strategy needs to address the advantage of competence and skills for the company for a horizon of decades. Sustainability in the improvement factors throughout the organization, instead of individual activities, allows the organization to build unique competence which is fitted to the strategy. Continuous competence development also enforces the company's identity. (Porter 2008: 17) Highly educated and skilled engineers in context of the practiced services are visible for the customers, since they are often present in the customers' facilities.

Good quality of the service delivery depends greatly on the customers' positive experience. By applying human factors to service design and studying and understanding customer experience, the company can improve its customers' positive experience. Behavioral sciences propose that customers do not like unexpected changes and are satisfied when they can behave as learned to do. It means that a consistent sales approach do not only save the sales people their time, but improve the customer satisfaction. (DeVine et al. 2012: 2) The level of consistency is defined based on the customers' profile; not all the customers are equally valuable for the company.

In implementing support services for goods and services, it is suggested that service representatives' behavior should also be standardized in retail service sector. Having a standardized customer service, however, can jeopardize high quality level of the service. Standardization is done in many firms by using scripts to give a common tool for employees to serve the customers. The script has a good side when the service or product sold contains idiosyncratic terminology. Without the scripts, the service personnel are better for firms, switching languages and having positive outcome without extra costs. Flexibility in terminology, however, can end up in problems in business processes. (Bolton et al. 2006: 3) On the other hand, highly developed and tailored services might require different sets of terminology. In that case the sales personnel is required to master the messages.

Offering the embedded services has also be aligned with strategic intent and source of advantage. Strategic intents are economies of skill and economies of scale, while

source of advantages are enhancing product and expanding independent services. If the company is not sure about their desired strategy, they can fail in setting correct price and in a level of customizing the product and service. (Auguste et al. 2006: 46). Well customized products create barriers for smaller companies that do not have enough resources to tailor the services.

In five forces that shape industry (Porter 2008), one force in the competition is “Threat of new entrants”. That is discussed more in details about the customer switching cost, Incumbency advantages independent of size and unequal access to distribution channels. All these three force aspects of competitive forces can be used to build barriers for new entrants. (Porter, M. E. 2008: 27) The use of the forces is related to the customers and in their needs.

One of the competitive advantages for service provider is the understanding how customers integrate service offering into their own operations. Customers become more involved in co-production of services nowadays. When the customer has requisite expertise to participate the service delivery it is more likely to do it. Many customers also want to have control of service delivery which ends in co-production of services. Availability of physical capital, such as tools and resources, plays also important role in ability to co-produce of services. Co-production results in risk sharing between producers and if the customer is willing to take a risk, it is willing to co-produce. (Lusch et al. 2007: 12) Obviously the parties in co-production have to benefit from it, getting physical and economic benefits and value.

In order to reach co-production or any value based cooperation, the sales person is required to sell the values for the customer. Value based selling requires additional sales skills from the sales person. These required additional skills are related to financial, strategic and operational knowledge and experience in the business area that the customer operates in. Not all sales people have such skills. One solution is to use team selling or otherwise provide the needed competence for the sales persons. (Mattsson et al. 2011: 205) The organization which aims at moving towards its value based-management is required to address this demand for the complex value based solution selling.

The existing sales forces can be trained towards value based selling to some extent, but in many cases it is more efficient to recruit new sales people with the valued based

selling skills. The sales of the values are not like traditional sales, but can rather be compared to represent an intellectual project to improve the customers' business. The approach is more consulting-like than traditionally sales oriented, and the sales person is required to understand the customer's business needs. (Mattsson et al. 2011: 205) In the best case, the sales team includes a person with the former experience from the financial, the strategic and the operational sectors.

When the company has established the sales team or individual sales people able to exercise value based selling, they need the solutions and arguments to sell. The sales arguments in the value based selling are values, the benefits for the customers, the solutions that help the customer to overcome critical issues in the business. The solutions are required to develop for the sales and marketing to communicate the values, the benefits. As part of the solution development the Value Propositions are required to develop.

3.2 Crafting the Value Proposition

Customer Value Proposition has become widely used term in sales and marketing in business environment. Value-based selling behavior shifts selling to implications of using the goods on the customers' behalf, while a traditional approach highlighted customers' needs and satisfaction. Value-based selling requires more attention in value the customers get in using the goods, than in selling functionalities or customers' benefits. Value-based selling is a multidimensional concept having three salient dimensions: *understanding the customer's business model, crafting the value proposition and communicating the value.* (Terho et al. 2012: 178)

Understanding the customer's business model is crucial in value-based selling, because the supplier has to understand the customers' goals, earning logic and the customers' customers' expectations. Understanding the customers' business model is needed to create value proposition that really delivers value to the customers' businesses. Understanding the business model also enables to identify drivers that add substantial value to the customers' businesses. (Terho et al. 2012: 179-180)

Understanding the business model can be helped by service innovation sensing methods are customer-linked service sensing, service system sensing, internal sensing and technology exploration. Customer linked sensing means testing of development by

studying customers' needs. Service system sensing is used to study service networks and co-producers such as subcontractors and third party companies. Internal sensing is used to study service methods within own company and service organization and used methods. Technology exploration is used to find new technologies for support service and to build new service solutions. (Kindström et al. 2012: 1067)

Crafting the value proposition is a process where is identified the values that add substantial value to the customers' businesses. Quantification effort is a major part of creating the value proposition. There are different methods used in quantifying the value proposition: customer specific value calculation, value studies, simulations, and return on investment studies, life cycle calculations and value created to reference customer. Quantification builds monetary evidence of the value proposition when used by the customers. The value proposition cannot be created by the supplier alone, but requires discussion with the customer and customer specific data. Value proposition crafting is based on service in use thinking of co-creation. The size of value opportunity must be visible to the customer, which more important the exact numbers. (Terho et al. 2012: 180-181)

Communicating the value is important to make a credible demonstration of the offering's contribution to the customer's business goals. Difference to traditional selling and sales promises is that the value-based selling provides evidence for the promised value. Such communication should be transparent and maintained as an open dialogue to maintain a trust with the customer. Credible communication should reduce a risk for the customer by presenting reference cases from the past successes and provide evidence of the supplier's ability to deliver the value promised. (Terho et al. 2012: 181-182)

Moreover, customer value can be classified as desired and perceived value. *Desired* values are elements the customer wants the service or product to deliver in a specific situation, to achieve the customer's desired goals. In identifying the customer's value, it is essential to identify also sacrifices the customer has to take in order to receive the desired values. As for the net value, it is used the perceived value which is a sum of the desired value and the sacrifices. The sacrifices cover all the costs the customer deals with in search, purchase and use of the services. (Töytäri et al. 2011: 494) Therefore, the perceived value can be measured as a difference between desired value and a total cost of ownership, as shown in Figure 2.

Figure 2 below illustrates the value model where the desired and perceived values are defined.

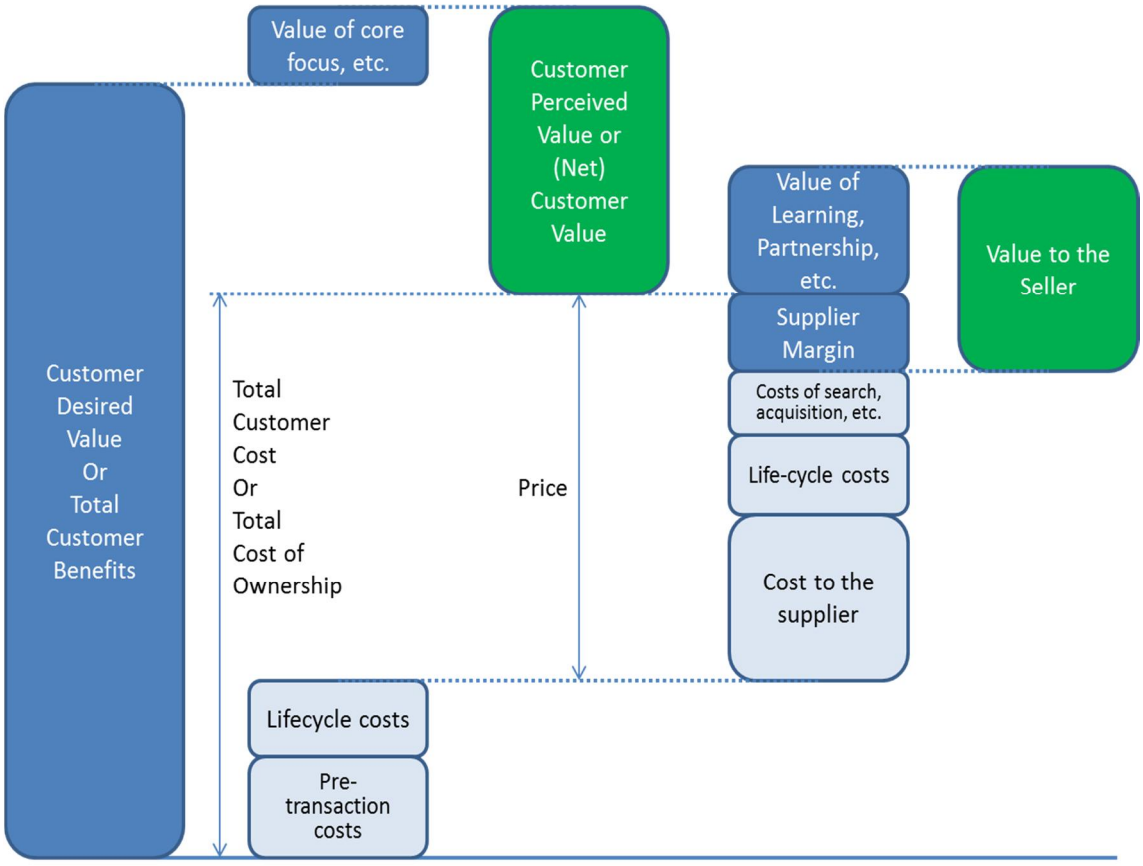

Figure 2. Customer desired and perceived value with customer and seller comparison. (Modified from Mattsson et al. 2011: 186 and Töytäri at al. 2011: 494)

As seen in Figure 2, customer desired and perceived value with customer and seller comparison, a value model is illustrated by modifying from what Mattsson et al. (2011: 186) and Töytäri at al. (2011: 494) presented. The customer's desired value plus additional values from focusing on the core business less the total customer cost or total cost of ownership provide the customer's perceived value. The total cost of ownership consists of pre-transactional cost and life cycle costs plus the price of the purchase. The price and the additional value of increased learning and partnership development provide the desired value for the supplier. The supplier's perceived value is then the difference from the desired value minus all the costs of producing the goods.

Perceived value for the customer presents a relationship between perceived benefits and perceived sacrifices. The perceived benefits are physical attributes, services and technical support in relation to use of the product and perceived quality in relation to

the purchase price. The perceived sacrifices are costs involved in purchase of the product, such as purchase price, acquisition costs, transportation, installation, administration, repairs and maintenance, risks of failure and poor performance. The perceived value is individual and subjective and varies between customers. (Ravald et al. 1996: 21-22) The perceived value is related to desired value and the sacrifices.

The desired value and sacrifices are difficult to form, before they are identified properly. The values can be, for instance, tangible, intangible, monetary, physical, abstract, concrete, mental or many more. The value comes concrete only after using the goods or services, when the delivery is measurable and makes sense. When suppliers move from the goods dominant logic to the service dominant logic it is not anymore easy to measure the value created. (Töytäri at al. 2011: 494) The value based selling requires specific skills from the sales forces.

Most of the value propositions claim for savings, but are often weakly justified and the customers take them as a marketing jargon. Anderson et al. (2006: 92) propose that the value propositions can be classified into three types: *All benefits, Favourable points of difference and Resonating focus*.

All benefits type of approach lists all the possible benefits the sales person believes the offering delivers to the customer. Propositions are not related to the values the goods really provide to the customer. For the sales person this approach is the easiest and cheapest way to construct the value proposition. *Favourable points of difference* type of approach recognizes that the customer has an alternative. In a competitive situation where the customer has alternatives the suppliers have to identify advantages their product delivers better than the one from the competitor. In this situation, it is crucial to understand the competitors' offering and the customers' problem to highlight the benefits that differentiate it from the competitor and meet the customers' requirement. Finally, *Resonating focus* type stresses the fact that all the customers have some critical issues in doing the business. The suppliers should provide the customer value proposition that meets those few critical issues the customer has. (Anderson et al. 2006: 92-94) The value proposition is demonstrated and documented to be able to communicate the way that demonstrates that the supplier understands the customers' business and critical issues.

In a competitive situation, the competitors might introduce similar benefits to the customer. Anderson et al. (2006: 94) propose that it is useful to sort value elements in three types: *Points of parity, Points of difference and Points of contention. Points of parity* element describes the performance or functionality that is close to another alternative. *Points of difference* element describes the values that are either superior or inferior to another alternative. *Points of contention* element are those where supplier and customer disagree between parity and difference elements. (Anderson et al. 2006: 92-94) Before the parties can argue on the values, the values need to be documented and demonstrated to each other.

Thus, in order to present a persuasive value proposition, the supplier must be able to describe and document them. *Value word equations* can be used to show *Point of difference* and *Point of contention* in relation to the competitors' value propositions. Equation is constructed in a text form as a simple mathematical expression, to compare functionality or performance to competitor's offering and to convert the value into a currency. The value proposition should be also *Distinctive*, *Measurable* and *Sustainable*, to be able to present them in the *Value word equations*. Obviously, it must be superior to competition, based on a tangible point of difference, and useful over a long period of time. (Anderson et al. 2006: 96, 98)

Figure 3 below illustrates a value build-up relationship with value elements.

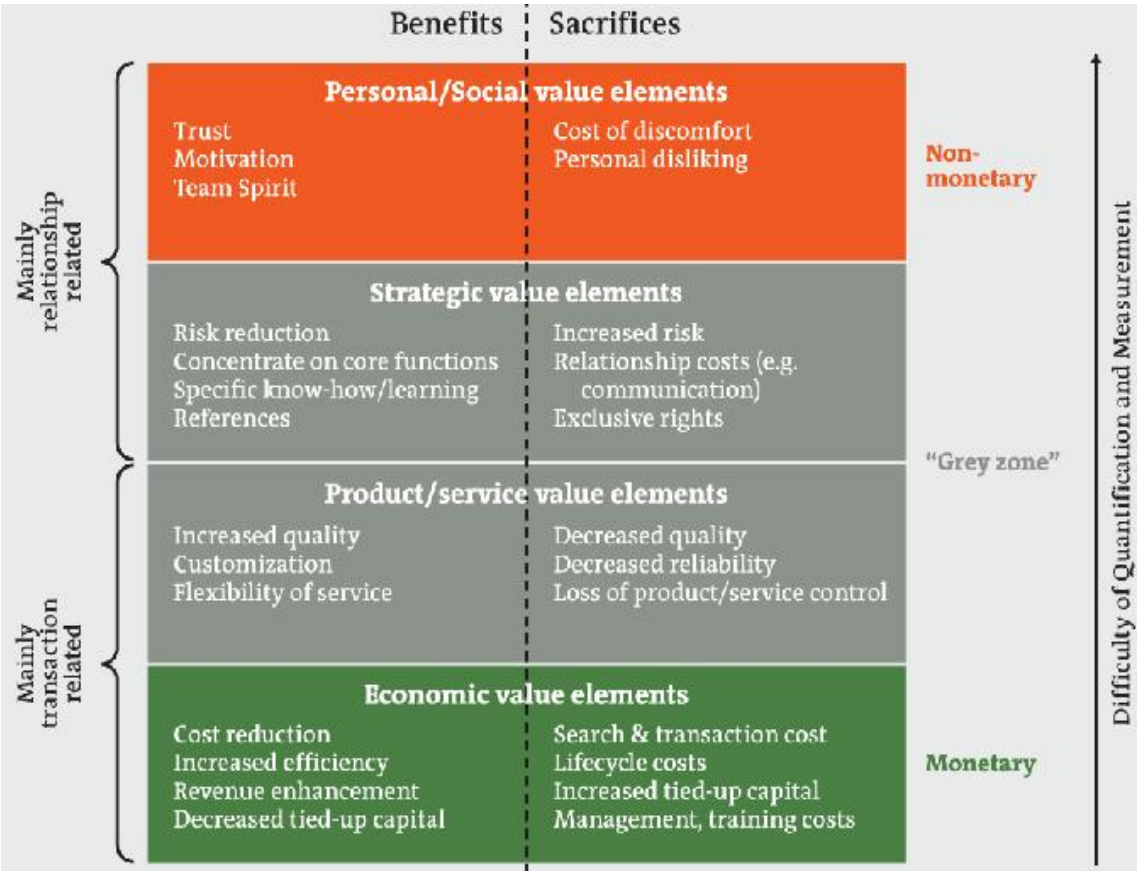

Figure 3. “Illustrative model of value build-up relationship” (Mattsson et al. 2011: 188).

As illustrated in Figure 3, four elements are identified with the specific value sources in the illustrative model of value build-up relationship. The proposed elements are: *Personal or social elements, strategic elements, offering-specific elements and purely economic elements*. Personal and strategic elements are related to a relationship between parties in buying and selling, while offering and economic elements are related to transactional businesses. Economic values are monetary in their nature and are easy to quantify. Personal and social values are difficult to measure or quantify and therefore not considered as monetary values. Strategic and product related values fall into grey zone where some aspects can be measured and some not. The framework can be used as starting point in thinking value elements in the company’s offering. (Mattsson et al. 2011: 188) In using the model, it is important to identify the value elements that bring the biggest value to the customer and the biggest business opportunity to the company.

In long term customer relationships, the key topics are not product quality, brand image, tailoring, supporting services and other benefits that are important in the moment of selecting a supplier where to buy. Rather the key topics are safety, credibility, security, continuity and similar that increase trust to the supplier and encourage loyalty as a result. Trust is built through successful transactions where the customer starts to feel to be safe. (Ravald et al. 1996: 24-25) Sacrifices made to earn the benefits of the offering reduce by safe, credible and secure partnership.

As described above for the values and the long term customer relationships, the customers appreciate issues that help in critical business issues. The key topics for the long term customer relationship are related to issues that support building the trust between the parties. In the context of this study, the proposed solution to build the trust and long term relationship are the Remote Services and Condition Monitoring Services.

3.3 Remote Diagnostic Service and Condition Monitoring Service

Remote services are fast growing value-added service for remote locations or to serve multiple locations by limited resources. By utilizing remote service consequences any unplanned breakdown can be minimized. In complicated and skill demanding systems, remote diagnostic system is efficient way of using specialists to benefit multiple locations. (Bonavita, N. 2013) Also the cost of using experts is reduced due to avoidance of distance costs and better utilization rate.

According to a study conducted already years back, it was identified that a very significant percentage of the service calls do not require a service engineer to travel to the customer premises. Technical support cases could be corrected by exchanging instructions through telephone and shipping spare parts. Equipment can be also equipped with communication links, self-diagnostics and other diagnostic and corrective mechanisms. In telecommunications, it was identified that 10-40 % of the hardware issues and 80-90 % of software issues can be corrected without the service engineer on-site. (Blumberg 1982: 70-71) In order to avoid travelling on-site, it is required to build certain facilities to provide the remote services.

Three structural mechanisms support the remote services; *Technical assistance centres*, *Diagnostic decision tree analysis* and *computerized remote diagnostic systems*. The basic approach involves the availability of providing a technical assistance, which

can be provided by the centre manned with experienced support engineers, extensive documentation and test products. The calls are tracked by computerized call handling the system, while the service engineers and spare parts can be dispatched quickly by the support engineer. In this type of service, a diagnostic decisions tree can be established to support the engineers in doing diagnosis based on the customer calls. (Blumberg 1982: 71-72) Decision trees are composed from known symptoms and causes in variety of equipment the assistance center supports.

In the wind turbine industry, for example, the value of the remote diagnostics and automatic monitoring systems has been realized due to difficulties to get up in the tower to make manual or visual inspections. Especially in large wind turbine farms, it is hardly efficient or practically impossible to have enough labour to cover all hundreds of turbines manually. Therefore, remote monitoring is needed to monitor every aspect of the operation. For troubleshooting purposes, the remote connection provides easy and flexible way for the first actions due to connectivity over Internet. (Martino 2013: 13) Many of the failures can be then managed remotely or the service engineer advised to start the work from the failing component immediately when on site.

Additionally, the remote diagnostic systems also provide data collection and reporting capabilities. Due to historical data the remote systems can be utilized to condition monitoring purposes to plan preventive maintenance actions accordingly. With good knowledge of the current stage of the system, the maintenance actions can be planned to the occasion when it disturbs least the operations. (Martino 2013: 14) In the wind turbine case, the moment could be when wind is not blowing and production is stopped.

However, a remote diagnostic system becomes a service only by having service center that utilize the data coming from the remote systems and provides it to the customers use. With continuously manned service centers in operation, Siemens has been able to solve remotely about 80% of cases, without sending the service engineer to the site. They can reach response time average of 10 minutes and in 99% of the cases one hour. (Martino 2013: 15-16) Condition monitoring services are expected to grow in the future and to have major focus on the remote service for the wind turbines.

3.4 Framework of the Study

The framework is combination of the value models proposed by Mattsson et al. (2011: 188), Mattsson et al. (2011: 186) and Töytäri at al. (2011: 494), with additions from other literature to provide additional vital elements for the supplier needed to construct the value proposition. Since in this study the values were not possible to define in monetary terms, or in a way that the values for the customer and to the supplier would be comparable, it was decided to analyze values separately for the customer and for the supplier. Consequently, the framework was developed further on for the supplier side, to have the elements to construct the value proposition. The value elements were merged from Mattsson et al. (2011: 188), and the bridge style was proposed by Mattsson et al. (2011: 186) and Töytäri at al. (2011: 494). The additional elements were proposed by Terho et al. (2012: 178).

Figure 4 below presents the Framework of the Study, modified for the Customers' view.

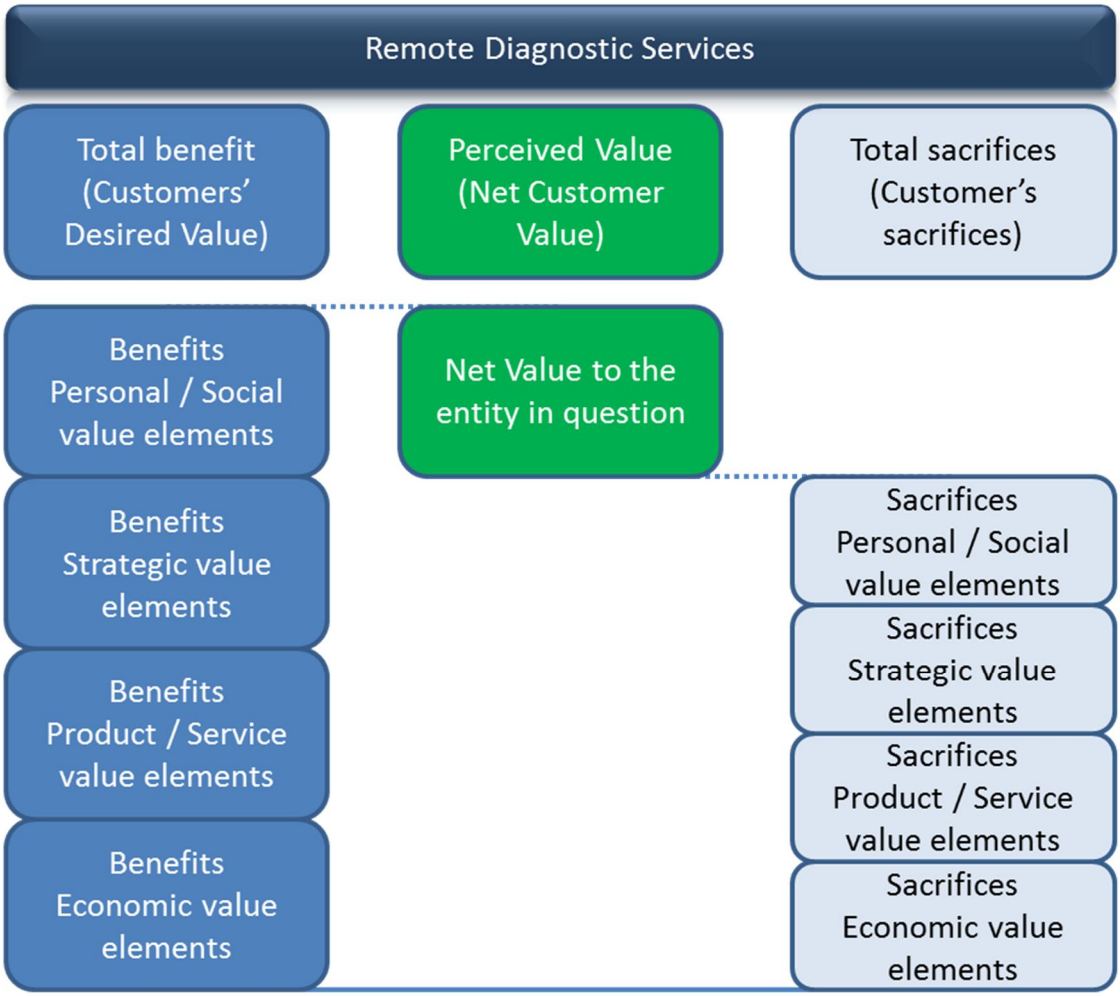

Figure 4. Modified model of value and sacrifice elements for the *customers.*

As presented in Figure 4, the modified model of value and sacrifice elements for the *customers*. The basic framework has a value model used to construct the Value Propositions from the customers' point of view. The customers' desired benefits are presented in the value model on the left side and the sacrifices are presented on the right side. The desired benefits and their related sacrifices are divided in the framework into the elements of *Personal / Social values, Strategic values, Product / Service values* and *Economic values*. In the middle, the perceived value is located as a bridge between benefits and the sacrifices. This basic framework is used to present the values for the customers.

Figure 5 below presents the same framework extended with the elements important for *the supplier.*

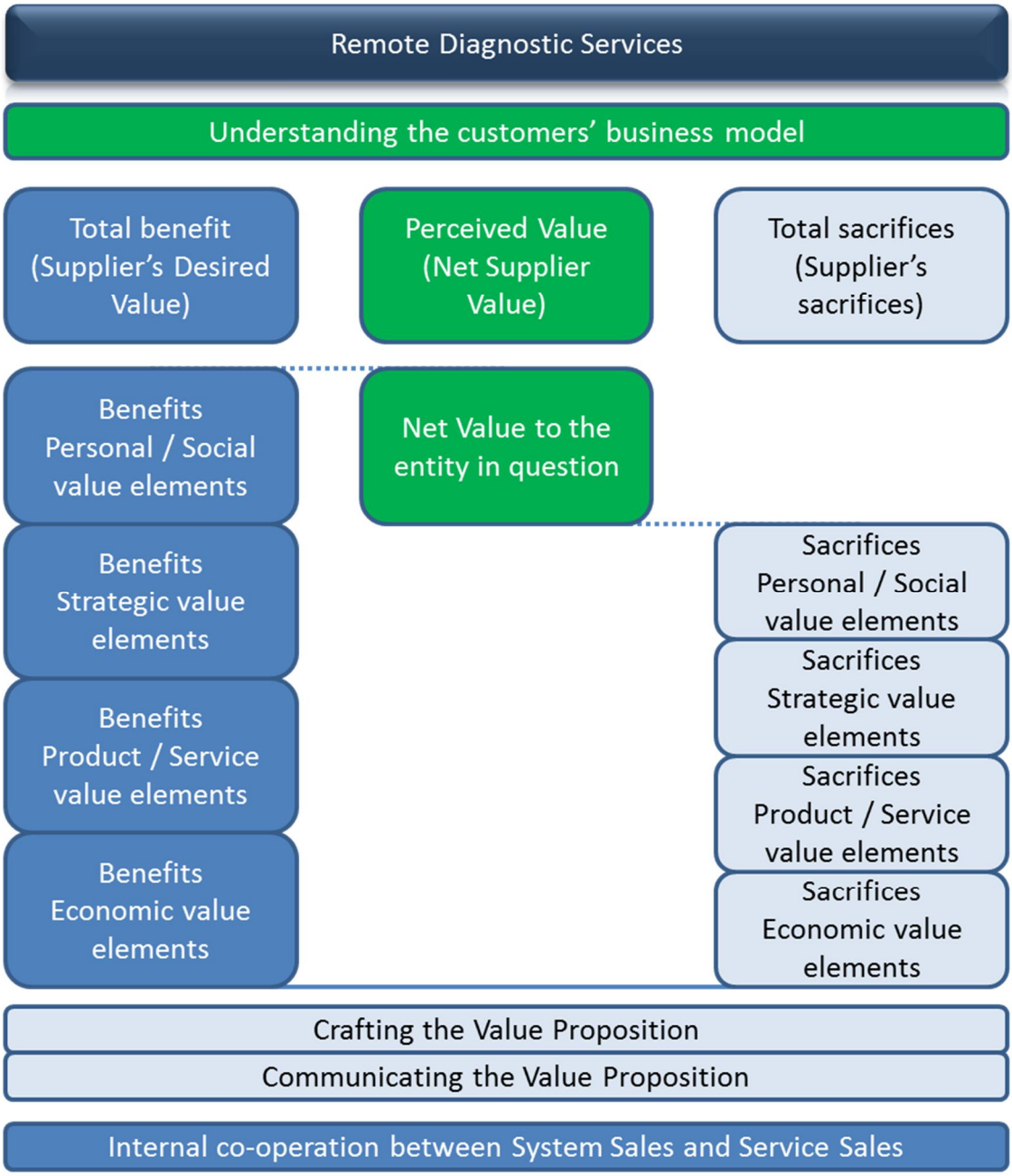

Figure 5. Modified model of value and sacrifice elements for *the supplier.*

As presented in Figure 5, the modified model of value and sacrifice elements for the Supplier, the complete framework has the value model used to construct the Value Proposition from the suppliers' point of view. The same elements are used in the value model as are in the customers' model, but additionally there are elements for the process to construct the value proposition. The elements for the construction process are: *understanding the customers' business model, crafting* and *communicating the value proposition.* In the product based business, the remote diagnostic services require in-

ternal co-operation between the System Sales and Service Sales, which is indicated as the foundation for the value model.

This framework is used to construct the interview questions, to analyze the data and to propose the outcome for the study. The same structure is used and presented in every phase of the study.

4 INTRODUCTION OF THE CASE COMPANY AND THE SERVICES

This section introduces the case company and the remote diagnostic service available. First, it introduces the case company, secondly, it introduces the remote diagnostic services.

4.1 Background of the Case Company

There are two units in the case company related to the sales of remote services, the System Sales and Service Sales. The System Unit of the case company is responsible for sales and delivery of total electrical systems consisting of an integrated package of products mainly sourced from the parent company's factories globally. The customers are the ship yards building and selling the ships in the Marine industry. The owners of the ships buy the ships as complete packages for certain purpose, giving freedom for the ship yard to purchase needed systems and products from the markets. In the case company, after sales markets are managed through the Service Unit. The customers are the owners and operators of the ships, depending on their business model and responsibilities described in a leasing or operating contract of the ship.

The System Unit called Marine Systems is divided to System Sales, Purchase, Engineering and Warranty departments. The sales department sells the system delivery which is handed over to engineering department for delivery with the support from purchase department. When the system is delivered a responsibility of the customer relationship is handed over to a warranty department. The warranty department is responsible for the customer relationship until the end of the warranty period. Repairs required during the warranty period are executed by the personnel in the service unit, in a control and for a cost of the warranty department.

The Marine Systems is mainly responsible for the customer contacts with the ship yards, while the Marine Service unit is responsible for the customer contacts with the owners and the operators of the ships. Figure 6 below illustrates the business environment.

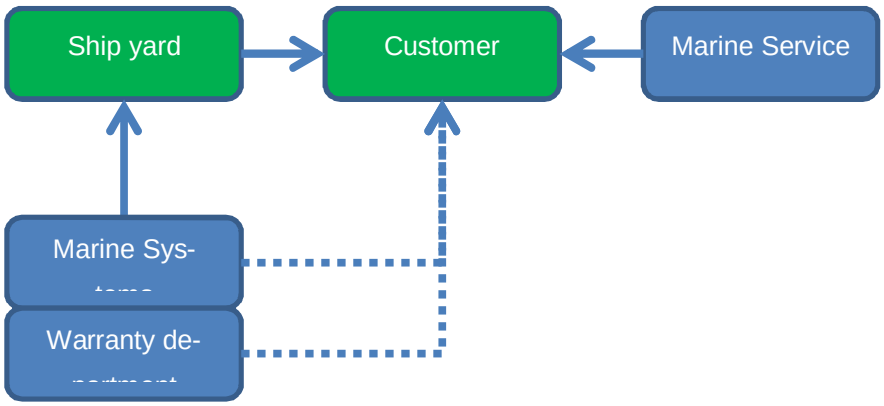

Figure 6. Business environment.

As seen in Figure 6, the Marine Systems has direct relationship to the ship yards and secondary connection to the ship owners, the end customers. The Warranty Department as part of the Marine Systems has contractual connection also to the Ship Yard, even though the warranty repairs are done for the vessel operated by the Customer. The Marine Service Unit has direct relationship to the Customer due to operational support through life time of installed equipment.

In the marine industry, customers belong to different customer sectors. The customer can be the owner, the operator, a charterer, a lessor, a lessee, a management company, or any party that is held responsible for operations of the ship. Depending on the contract with the owner of the ship, the responsibilities for operations can be shared many ways. For instance, in a time chartering a fuel bill is paid by the operator of the ship, while the owner is responsible for an availability and functionality of the ship. During a sales phase of the new systems, the end customers are approached in order to promote own solutions, that the owners could demand from the ship yards.

In spite of belonging to different customer segments, customers are the force to drive the suppliers from the goods dominant logic to the service dominant logic by requiring support functions. It mostly happens due to their awareness of operational risks and higher willingness to co-produce services. New sophisticated solutions and computerized operations demand more skills from the crew members of the new ships. The operators are struggling to find competent crew members and have noticed the lack of skills. Therefore, operational support from the equipment manufacturers is in demand.

The service unit called Marine Service consists of global network of 20 Marine Service Centers worldwide. The main business of the Marine Service Centers is to support the

ship operators. The support is all about repair, maintenance, spare part sales, modernizations and operational support and development of efficiency. The markets of the Marine Service are limited to the products manufactured by the factories in the case company. The installed base, for example, currently provides markets for about 1 500 vessels and 50 000 individual equipment. Marine Service continues the customer relationship after the warranty period is over for the rest of the life cycle of the ship, or until the installed base is removed from the ship.

Presently, Marine Service provides Remote Diagnostic Service (RDS) with an integrated Condition Monitoring Service (CMS) for the ship owners and the operators. The remote services are utilized for first time at the warranty period to benefit the Marine Systems unit and lower warranty costs, and to provide a quick response to the ship operator. Due to high technological nature of the sold products, the service business is skill based and therefore the strategic decision to benefit from economies of skill was a natural choice for the case company. The service business relays on highly qualified service engineers with deep knowledge of the products. Continuous training and competence mapping are the keys for success.

4.2 Remote Services

Typically, the Remote Diagnostic System provides monitoring and expert services. The service consists of hardware installed on-board the ship, infrastructure to transfer a data to shore station and Support Center to analyze the data and communicate with the operator of the ship. The hardware on-board the ship records various signals from products installed and provides full access for the skilled engineer in the Support Center for fault tracking and troubleshooting. Installation on-board the ship provides as easy access for the skilled engineers in the Support Centre to download up-to-date measurement data to assess the situation on-board in order to give immediate guidance when needed. High quantity of harmonized data allows advanced condition monitoring opportunities. The reports consist of condition status and recommendations to improve performance of each product connected. (Nowak 2013: 4-7)

The main advantages for the owner are claimed to be, first, to “maximize vessel uptime, performance and profitability”, secondly, “to maintain and optimize system performance while lowering service costs”, thirdly, “to expedite problem solving by reduc-

ing time required to identify and correct the source of the problem", and fourthly, "to facilitate maintenance scheduling and budgeting". (Nowak 2013: 9)

For the operator of the ship the RDS provides, first, "an immediate assistance in critical situations from the experts, product engineers, and support engineers"; secondly, RDS "provides equal information for both the RDS Service Center and the crew on board for interactional troubleshooting and fault-tracing"; thirdly, "enables in-depth analysis of equipment by providing high resolution data collected continuously"; fourthly, "enables proactive maintenance by detecting potential issues before they escalate and cause system failure", and fifthly, "use of condition monitoring techniques tailored for different types of equipment, generates early warnings about detected defects and monitors their development over time, which helps RDS support personnel to suggest predictive maintenance actions". (Nowak 2013: 9)

The remote diagnostic data collected on-board the ship is transferred daily to the shore side servers. The data received is automatically saved in a ship related database for further usage. According to the reporting period, the automatic reports are generated to be analysed for providing recommendations to the operator of the ship. Depending on the agreement with the customer, different KPIs can be utilized in the report. The KPIs in the reports can be used to measure performance of the equipment on-board the ship. The equipment can be benchmarked against each other and against another ship with similar equipment and operational profile.

4.3 Remote Diagnostic Solutions

RDS enables all remote services, such as condition monitoring and advanced technical support for several products manufactured by the case company. In the ships, the diagnostic solutions focus on electrical equipment, such as frequency converter and protection relay, while condition monitoring solutions focus on mechanical equipment, such as generator and electrical motor. All main components in the system package are covered with the diagnostic solutions.

The block diagram presented in Appendix 1 illustrates the distributed architecture of the remote diagnostic system in the cruise ship. In this example, the total scope of the diagnostic system includes diagnostic solutions such as D4Propulsion to monitor the propulsion drives ACS6000, D4Switchboard for monitoring MV protection relays, and

D4Azipod to monitor the propulsion motors in Azipod Room. All subsystems are connected in a secured way into a common diagnostic network using managed switches. The D4Machines condition monitoring system collects condition data from the rotating machines, such as generators and thruster motors. The system is connected to the same network with diagnostic computers and the HMI PC is utilized to collect and store condition data.

The condition monitoring solution is based on service application and diagnostic algorithm called MachSense. The solution was developed to provide condition monitoring solution for rotating parts of the electrical machines. D4Machines diagnostic module is designed for condition monitoring of critical rotating machines. The data is collected by vibration, electrical current and voltage measurements. The measurements are taken periodically, in about once a day, under normalized condition of rotating speed and load of the measured rotating machine. (Nowak 2013: 66)

The raw data of the condition monitoring, as well as data from all remote diagnostic solutions, are loaded periodically from the servers on-board the ship to the shore side servers. The loaded data is used to case reports and periodical reports of condition of installed equipment. The reports are generated automatically and are subject to analysis and recommendations by the skilled engineers in the RDS center. (Nowak 2013: 66)

The data collected from the diagnostic solutions are used to collect historical data and to be used in fault tracing in case of failure in the equipment. The data is collected in the shore side servers and utilized when needed in support and development purposes. The data is utilized in the automated reports provided to experts for the further analysis and the recommendations.

5 RESULTS AND ANALYSIS

This section describes and analyzes the results of the study based on the data collected for the current state analysis. First, it introduces the results from the interviews related to the service and system unit relationship, and secondly, it discusses the results from the interviews related to the current value propositions.

5.1 Internal Cooperation

According to the interview results, the focus has been placed on the system sales more than on service sales, but in the recent years the focus has moved more towards the service. According to the System Sales representatives, the focus in the organization is scattered but moving towards service. According to the System Sales representatives, currently the need for the service is well recognized in both service and system sales, but the organization structure does not support the common targets. The competition between system and service departments exists partly due to case company's internal target setting, where each department is responsible for its' own results. There are not common targets to support the strategy of improved service business. System sales is focused on delivering products rather than systems enabled with remote service capabilities. The Service representatives mentioned in the interviews that the demand from the customers exists to provide operational support and especially to commit to the maintenance and the life cycle costs of the system packages.

> *"Focus has been on product sales, but the direction is more to service sales. It has been recognized that the new sales needs the service promise when they sell new systems. Service sales need HW from the product sales to be able to sell services in future." (Service representatives, Interview 3)*

For a question why the service is needed, the replies were related to keep the customer relationship alive and to help repetitive purchase of new products and systems. The service also helps in building long term relationship and reputation on markets when is needed to have a proper service network.

> *"Continuous relationship with the customer due to service co-operation. Allows us to service our installed base including upgrade and retrofit. Well*

executed service strengthens our position in new projects." (Service representatives, Interview 4)

All Service representatives mentioned in the interviews that the demand from the customers exists to have good operational support and skills based services. Currently, the service is more transactional scalable volume offering rather than based on skills and competence. The interview results indicated that more sophisticated systems and services call for skilled engineers and the companies are required to provide such a service, in order to sell the system solutions. Demand for the service has rose due to increased maintenance costs and quality issues in the products. The customers also see value in extended warranty which requires proper maintenance to be granted. Some shipping companies prefer to use 3rd party service suppliers, but their position gets weaker due to technically demanding products. That leads the shipping companies to search for original products manufacturers to provide the service. Earlier the service department was used to provide warranty repairs, but nowadays the service support is in demand from the customers.

5.2 Customers' Value Elements

The following sub-section presents the values identified in the interviews. The values are introduced for the customer, building up the presented frame of the value elements. In the interviews it was not possible to get any reliable monetary figures to justify the proposed values. Therefore also the perceived value cannot be calculated either to the customer or to the case company.

Economic Values

In the seven interviews, a prevention of cost, failure, downtime or risk was mentioned as benefits in all records. Failure was connected to cost, and risk was mentioned in connection to risk management. All the mentioned issues are related to monetary values, but the quantitative values were not justified, but rather guessed at the moment of the interview. As a summary the main topics, the interviewees mentioned the risk management and downtime cost. Both relate to economic values since every risk is quantitative nature in the end and downtime means loss of revenue and possible compensation to a customer. Part of the downtime costs are distance costs when the repair is required onboard. By utilizing the remote connection and a spare part stock onboard

the failures can be fixed without the service engineer travelling to the ship. For the sacrifices was mentioned hardware cost, software costs and annual fee for the service.

As mentioned in the first interview, downtime cost is born from failure during sailing. That leads to skipped ports of calls, even if in the cruise ship redundancy is used to continue sailing. Mentioned cost of the skipped ports was unreliable and depends on the cruise ship company and their compensation methods. Typically the skipped port is compensated with discount for the next cruise tickets and with free drinks onboard. Total termination of the cruise in case of major failure results higher compensations and downtime costs. Failure situations can be some much different that it was not considered in this study and monetary value estimates were limited out.

> *"Downtime cost - Failure during sailing leads to skipped ports of calls. Two shaft lines give possibility to continue sailing, but reduced speed. Skipped port of call results in 50% discount of the next cruise and possible drink tickets. Cruise price is about 1000USD per cruise." (Service representatives, Interview 1)*

As a summary for the Economic Value benefits for the customer are the risk management and downtime cost due to failure. On opposite side are sacrifices what are investment for the technology and the service fee.

Product / Service Values

In all the interviews, it was mentioned that the system package is improved and level of support is improved when the Remote Diagnostic System is integrated into the package. Topics such as increased level of technical support and easier and more efficient service execution were the most mentioned issues. Proper troubleshooting before dispatching the service engineer and the spare parts was mentioned in all replies from the Service representatives. On the other hand the monetary values were not possible to get even by estimates. It was clear that the product values are not monetary values and as such not possible to quantify. As mentioned by the System Sales person in the Interview 5 the Remote Diagnostic Service is something all system providers claim to have and the price is marginal for the whole package. The Sacrifices for the Product / Service Values are very few and mainly related to complicatedness of the system when more components are installed.

> *"Difference in pricing is marginal, either we have the same what the others have or we more, but the price difference is not remarkable." (System Sales, Interview 5)*

As a summary for the Product / Service Value benefits for the customer, these values comprise, first of all, the improved technical support and efficient service due to better troubleshooting and estimation of the needed competence and spare parts. For the sacrifices there is not anything remarkable to take into special count.

Strategic Values

Strategic Values raise up the issue of maintenance planning and the support for maintenance budgeting when the Condition Monitoring function has been used. In all the interviews, the maintenance was mentioned as the main topic, but from different aspects, such as planning, budgeting and crew management. Having the Remote Diagnostic Service in place the maintenance can be forecasted and planned properly. In overall knowledge of the system increases and maintenance can be planned efficiently. The Sacrifices from Strategic point of view are related to deeper cooperation with the supplier and to reduced independency in choosing service providers. Long term agreement engages the customer to single supplier for extended time.

> *"Better knowledge about the system situation. Can order spare parts in time, but closer to the maintenance". (Service representatives, Interview 3)*

As a summary for the Strategic Value benefits for the customer is efficient maintenance management. The Sacrifices are lost independency and tighter cooperation with single supplier.

Personal Values

As for Personal Values, it was mentioned in the interviews, that a deeper cooperation is needed between the supplier and the customer. To achieve this, the increased communication was mentioned as the key for the cooperation. Having the Remote Diagnostic Service in place, the communication increases due to frequent reporting and through direct contact to the specialists in the Technical Support Center. When com-

munication is regular and related to daily issues it is pleasant and friendly, instead of emergency situation when the topics discussed are critical and difficult. For Sacrifices replies in interviews, proposed that communication is reduced to middle levels in the customers' side because the vessel personnel can contact directly to the supplier and the top management gets the reports automatically. If the service is not sold to every level in the customers' organization middle layer employees might lose connection to the supplier.

> *"Communication happens in pleasant and regular situation, instead of emergency situation." (Service representatives, Interview 4)*

As a summary for the Personal Value, the benefits for the customer are better cooperation and improved communication due to direct communication channel and frequent reporting. The Sacrifices address importance of all the layers in the customers' organization to get involved in the communication.

In the interviews, the benefits were well defined but sacrifices and monetary values were difficult for the interviewees to reply. For all the value elements the benefits are clear and replies were consistent providing good set of values to be proposed as the outcome of the study.

5.3 Case Company's Value Elements

The following sub-section presents the values identified in the interviews, for identifying the case company's value elements and how value propositions have been constructed. First, it presents the value propositions identified in the interviews. These values are introduced for building up the presented frame of value elements for the case company. In the interviews, however, it was not possible to get any reliable monetary figures to justify the proposed values. Therefore, the perceived value cannot be calculated either for the customer or for the case company. Secondly, this sub-section presents the results from the interviews, for additional elements such as understanding of customers' business model, crafting of the value proposition and communicating the value proposition.

Economic Values

For the case company, all the interviews indicated Economic Values to be the revenue earned from the remote service annual fees and the customers' investments to the technology. For the System Unit the greatest value is reduced warranty costs due to easier and faster troubleshooting and possibility to fix failures by using the crew instead of sending the service engineers. Additional values were more efficient utilization of the engineers and increased revenue from repetitive purchases and additional spare part sales due to extended life time of equipment. It was proposed that the customers can keep the equipment longer when they are maintained and fixed when early indications of a failure appear. When the remote diagnostic is utilized for early troubleshooting the engineers are used efficiently in the jobs they are competent to execute.

As the Sacrifices for the case company, the interviewees mentioned reduction in spare part sales and repair service trips, due to better troubleshooting and early detection of failures. Typically high margin emergency repairs are foreseen to reduce as well. System Sales representatives mentioned also difficulties in selling the service solutions, because the sales support department is not trained to specify the packages.

> *"Better and more efficient internal operations lead to better customer satisfaction. There is less pressure to increase prices when operations are more efficient. (System Sales, Interview 5)*

As a summary for the Economic Values for the case company, it can be said that the benefit is the increased revenue from the service sold to the customer and reduced warranty costs. Sacrifices are lost revenue from repair services.

Product / Service Values

For the Products / Service Value benefits, all the interviewees mentioned reduction in warranty costs due to more efficient repair of failures by utilizing the remote access to onboard the vessel. Equipment knowledge was mentioned to increase due to data collected from the ships in operation. According to interviews, the remote access can be used to track failures during warranty period and repairing actions planned the most efficient way, and even use the crew members onboard to fix the problems with telephone support. The sacrifices to have the remote functionality were mentioned to be

complicatedness and challenging engineering of the system. At the beginning before engineers have learned the system and standard solutions are drawn, it takes effort to get the system integrated into the system package.

> *"Yes, in warranty phase the product value is higher due to better access and knowledge of operation and use of the system." (System Sales, Interview 6)*

As a summary for the Product / Service Value benefits for the case company, the use of the remote access during the warranty period was mentioned as the most valuable. Additionally, the data collected from operation of the equipment provides knowledge and experience of using the system. The sacrifices to get the system onboard are related to the design and engineering of the system to be integrated into the system package.

Strategic Values

For the Strategic Value benefits for the case company, the interviews proposed understanding and knowledge about the products and improved relationship and reputation on the field of the marine industry. Deeper cooperation with the customers leads to improved trust on the markets and easier to sell future solutions. For the existing customers, the improved trust leads to repetitive purchases easier than without the trust. Earlier the support people spent a big amount of time in supporting vessels over telephone and travelling, but by utilizing the Remote Diagnostic Services same number of people can support a bigger number of vessels. The sacrifices mentioned are the commitments to fulfil contractual obligations when the remote service is utilized. As part of the Remote Service Agreement is a granted response time and delay might lead to penalties or even contract breach. Contractually it is a risk to promise certain response time.

> *"For the case company earlier, the key accounts were supporting vessels, but now the person is not anymore the link. The key account can manage more vessels [and] reduce the need for headcount." (Service representatives, Interview 3)*

As a summary for the Strategic Values, the knowledge of the system packages in operation and better cooperation with the customers were stressed. The sacrifices are the contractual risks that are involved in the Remote Service Agreements.

Personal Values

As the Personal Value benefits for the case company, the interviewees mentioned to share the same as for the customers. When personal level cooperation and relationship improves, that leads to easier business and new opportunities. Improved cooperation results in improved sales, both in system sales and in service sales. Among the sacrifices for the Personal Values, the interviewees mentioned the reduced cooperation with the customers' middle management.

> *"Helps to improve customer relationship to get more new sales orders." (Service representatives, Interview 2)*

As a summary for the Personal Value benefits for the case company, the key value here was improved communication with the customer. The only sacrifice is the relationship with the middle layer management that is not involved in a typical information chain.

In the interviews, the case company's values and sacrifices were well introduced, even though the monetary values were yet quite vague and not reliable to introduce in the study. Understanding the customers' business model was also mentioned as quite weak. According to interviews, the Value Proposition is not constructed systematic way and having customers' business model in mind. Based on the interviews, only the System Sales representatives mentioned the customers' business model and different needs in cruise industry compared to oil and gas industry where the remote services were originally developed. Service representatives focused on resolving the problems and in technical aspects of the remote services. The customers' needs were not analyzed or mentioned in the answers.

> *"In oil and gas business risks are not allowed, while in the cruise business risks are allowed but they must be manageable. Failure of essential equipment in an oil rig leads to immediate off-hire, but in the cruise redundancy*

> *is used to manage the risk and to continue operation." (System sales, Interview 5)*

According to the Product Manager, the service itself was requested by the customers and developed for the specific need in oil and gas industry. The values were not defined in the development process but the customers demanded the service and recognized the values by themselves. The technology to provide the remote services was developed in a project of system package delivery because the customer demanded such functionality. At the same time, similar solutions were developed in both system units, in Oil and Gas and in Cruise and Ferry.

> *"The idea was introduced by owner of FPSO vessel located in the Gulf of Mexico, because they wanted to have remote troubleshooting in their system. The customer gave the values to us." (Product Manager, Interview 3)*

According to the results from the interviews, the demand from the customers caused development for the remote service, which was developed further and productized. In the development process the focus has been on technology and engineering rather than in sales and customer value propositions.

According to the results from the interviews, crafting of the Value Proposition is not done in the development process. The results of the interviews showed that people constructed the value proposition based on their own, individual ideas. The official, properly constructed value proposition was missing. Neither Service nor System Sales representatives have been involved in crafting the value proposition. Even Service representatives do not know how the value proposition was constructed, and nobody have been involved in the process before.

According to the results from the interviews, communicating the Value Proposition is not done properly. In the interviews, it was possible to see that the value proposition is not credible and is based on everyone's own understanding, making it difficult to justify and demonstrate it in a credible way. The interviewees often constructed the proposition during the interview, instead of telling the official and published value proposition, provided with a with justified and credible argumentation.

According to the interviews, the Remote Diagnostic Service does not have much competition on the markets at the moment. The competition exists only on the system package level where all the system providers claim to have the Remote Diagnostic Service available. In the interviews, however, the System Sales representatives mentioned that the Remote Diagnostic is currently an additional feature that needs to be available but cannot be sold as a separate item or an additional option. For the Condition Monitoring, the competition exists but it is made locally onboard the vessel, and remote solutions are rare. In Norway, it is Karsten Moholt that sells the Condition Monitoring service, and it is a remarkable competitor in the field of condition monitoring to rotating machines.

Summing up, the interview results show that the current case company's *strategy* is *weak in service,* and the strategy is missing *especially for the Remote Diagnostic business solutions*. The *sales of the services* are not involved in the early stage of the system package sales. It was also found out that *the competence of the service sales as well as engineers* do not support sales of the Remote Services. The *existing sales are not targeted to selected customers* but more based on the sales people's own motivation. The *Value based selling methods* are not currently in use in the service sales. The *Value Propositions are not crafted in a systematic way*, but all the sales people use their own reasoning in sales of the services. The *Value Propositions are unique to industries*, so that the ones used in one industry cannot be used for others due to the difference in customers' business needs. Several suggestions for *Value Propositions were introduced* in the interviews within the areas of the context of the study.

6 Proposed Model

This section proposes a solution for the business problem based on the results obtained from the current state analysis. First, it describes the solution proposal for internal cooperation between the Service and the System Units, and secondly, it introduces Value Propositions for the Remote Services, from the customers' perspective and the case company's perspective.

The proposal for internal cooperation was first drafted based on the theories that argue that the service business requires cooperation between the product and service units, and later enriched with the insights from the interviews. Based on the findings from the theory, focus on the service sales is a strategic decision that should be made by the case company and grounded in the focus business area as well as the decisions as for the skills or volume based businesses. If the service business has the focus on service sales, as in this study, the value based selling can be selected as an approach to address this challenge. The value based selling requires formulation of the values for the services sold. Based on them, the value proposition can be constructed or revised to improve understanding of the values created both internally and externally, and discuss the benefits of the service for the customers, the company or the company's unit. That was the approach applied in this study.

In this study, the remote diagnostic services were used as a target service in the Service unit of the case company. The Value Propositions were constructed according to the framework, presented earlier in Section 3.4 and specified based on the results from data collection. Based on the interview results, it was proposed that the Cruise industry in the case company has different business needs to Oil and Gas industry, therefore the study is based on the needs of the Cruise industry only. Due to the lack of the data to identify the monetary values, the proposal does not include the discussion about the monetary effect on the benefits or the sacrifices either form from the customers' perspective or the case company's perspective. Finally, the Value Propositions are constructed to support the service sales as viewed from these perspectives.

6.1 Service in System Organization

According to the findings from the reviewed theories and results from the interviews in the case company, several improvement areas were identified that could have an effect

on sales of the Remote Services. The cooperation between the Service and the System Units was identified as an important element in enabling the sales of the Remote Services. Based on the results of the data collection, it can be summarized that, first, the proposals for strategy implications for the case company should be introduced, secondly, the improvements to the sales of the Remote Services in the System and the Service Units should be introduced.

Table 4 below describes the proposals for the case company in order to improve cooperation and sales of the Remote Services.

Table 4. Proposals for the management level in the Service Unit and the System Unit.

Proposals for management level in the Service Unit and the System Unit	
Business area	**Proposal**
Strategy	Review the strategy to include the Service business and the Remote Diagnostic Solutions as the key items
System sales	Include Service Sales to early stage of the system package sales
Competence management	Prepare competence plans for the engineers to develop and maintain competence level
Sales	Classify the customers to choose those where the Value Based Sales methods and value promotions provide the results
Service Sales	Take the Value Based Selling methods in use for the selected customers
Service Sales	Choose right people for the Service Sales to exercise the Value Based selling methods

As seen in Table 4, Proposals for the management level improvements in the Service Unit and the System Unit identified in the current state analysis included improving cooperation between the units and adopting the Value Based Selling methods for use in these departments. The identified suggestions are analyzed and explained in more detail below.

The study proposes that the case company has to review the strategy and pay attention to the service business as a key element of the case company's business model. For the strategy is proposed to include service business and the remote services as the key business. Embedded services and advantage of the skill based services are proposed to mention in the strategy, as well as focus on already enhanced products and expanded services. According to interviews the System Unit has competition in the system package sales and the competitors promote the Remote Services. The customers demand also for the service in the System Unit's sales phase and the services are already available in the organization, therefore it is proposed that the Service Unit is involved in the sales phase to promote the services. Since both, the System sales and the Service sales, are important for the case company they are proposed to include into the strategy equally and to highlight the benefits of the cooperation.

Due to the long history in the industry the case company has high level expertise in both the System and the Service Units. The expertise is proposed to utilize in high margin services, such as a technical and an operational support. In order to maintain the skill level it is proposed to have competence mapping and competence planning in place for all the engineers. Outdated competence ruins the advantage of the skills based business. For the System Unit it is essential to have engineers competent to design the hardware and the software enabling the Remote Services. According to the interviews with the System Unit persons the current stage does not support the engineering of the Remote Services and there is a lack of the competence.

Since the industries and the customers are different it is proposed to maintain a scalable volume services for the customers that are not identified as the key customers. The key customers are those with long term commitments, agreements and large installed base. The Remote Services and the technical support services are based on the Service Agreements what can be used to engage the customers to the supplier, preventing new entrants coming into competition.

For the Service Unit is proposed to pay attention on the sales and argumentation of the Remote Services. One of the values in the Remote Services was identified to be improved cooperation through increased communication which is proposed to highlight and take as an advantage for the business. To be able to utilize the advantage the service personnel is required to communicate properly with the customers. For the Service sales is proposed utilize value based selling and promote values the customers can

integrate into their own operations. The sales people have to realize that the values are different for the customers in different market areas and operations.

For the Value Based Selling methods it is proposed to arrange training and selection of the sales people that bring value for the sale team, from the value based selling point of view.

6.2 Crafting the Value Proposition

For a process of crafting the Value Proposition as part of the service innovation is proposed to include understanding of the customer's business model and needs. The customers' needs are proposed to be studied by a customer-linked service sensing, to test the development of the service solution with the customers to get direct and rapid feedback of the values. In the current Remote Services the development is based on technology exploration rather than to customer need sensing. Therefore it is proposed to practice more customer-linked service sensing as part of the value proposition crafting process.

For the Service innovation process is proposed to include the value proposition crafting phase, where the Service System sensing methods is used as the first step to evaluate the values for the customers. As a second step, there is proposed to add the customer-linked service sensing phase to evaluate the values from the customers' point of view. As the last step in the service innovation process, it is proposed to add a step for the communicating the value propositions to the sales network.

Due to the nature of this study the proposed Value propositions are made from the *All benefits* type of approach. The Value Propositions are proposed from the sales people point of view and are more like a list of all possible benefits. It is proposed that the Value Proposition crafting process is made from the *Resonating focus* type of approach, meaning that the values are based on the issues that are critical for the customers' operations. The Value Propositions are proposed to be documented to be able to demonstrate and communicate to the customers in a way that the customers get a feeling that the case company understands the customer's business and related issues there.

To be able to present the Value Propositions as a value word equations the Value Propositions are proposed to be measurable and sustainable. Therefore it is proposed that the Value Proposition crafting process includes evaluation of the monetary values for the Value Propositions. The values are proposed to craft in a way that the results are sustainable and possible to copy to another customer in the same field of operations.

Based on interviews and the reviewed theory it is proposed to use the Value Propositions in the sales of the Remote Services to the customers in the Cruise industry. The Value Propositions proposed are made for the cruise industry and cannot be directly used as such in the other fields of operations. The study proposes that the values are unique for the fields of operations. The Value Propositions are presented based on the structure of the Frame model introduced in Figure 4.

6.3 Value Propositions for the Customers

The Value Propositions made for the customer are proposed to use in the sales and argumentation of the Remote Services. The Value Propositions are constructed for the operators of the vessels. Table 5 below shows the proposed Value Propositions for the value element of Economic values.

Table 5. Economic value elements for the customer.

Economic value elements	
Benefits	**Sacrifices**

Economic value elements	
Improves risk management when failure situation can be resolved quickly Condition monitoring lowers a risk for failures due to early detection of the failures Reduces downtime and repair costs in case of the failure Extended life time of the equipment when planned maintenance is used in connection to the condition measures Failure situation can be identified properly and right spare parts and competent service engineer provided to the customer	Investment to the hardware and software Annual fee for the service agreement

As seen in Table 5, in Economic value elements, the value elements are based on the cost of the failure. The risk management is the high level approach to consider the failure situations and approaches to react. Since the risk has also cost involved the reduction of the cost of the failures is included as the Value Proposition. When the failure happens and the Remote Service agreement is in place the consequences of the failure can be reduced and the downtime cost limited. The Economic Value elements require only investment for the technology and the annual fee as the sacrifices. With such an improvement in the system package the Products and the Service is improved. Table 6 below illustrates the proposed Value Propositions for the Product / Service value elements.

Table 6. Product / Service value elements for the customer.

Product / Service value elements	
Benefits	**Sacrifices**

Product / Service value elements	
The technical support is improved for the operator The troubleshooting is cheaper and faster and specialists are better available even for smaller issues Predictability for maintenance needs and failures Automated monitoring and reporting of condition of the system gives transparency for the operations	Not really any sacrifices, the product and service get simply better

As introduced in Table 6, in Product / Service value elements, the value elements are based on improved usage of the system package by possibility to use the technical support and troubleshooting to operate the vessel. The reporting and monitoring of the system is automatic improving the knowledge and usage of the system. To get a better system is not required sacrifices from the product or service point of view. The system package gets better and the benefits provide the values without sacrifices in products' characteristics. From the product point of view it is strategically good value to invest to the products enabled with the Remote Service capabilities. Table 7 below illustrates the proposed Value Propositions for the Strategic value elements.

Table 7. Strategic value elements for the customer.

Strategic value elements	
Benefits	**Sacrifices**
Optimized and efficient maintenance planning due to knowledge about condition of the equipment Efficient and better planned operations and maintenance actions	Loose independency to decide maintenance providers and needed actions for the maintenance of the equipment The crew loose freedom within the company due to possibilities to benchmark operations between vessels

As seen in Table 7, in strategic value elements, strategically the Remote Service enabled system package has values for the maintenance operations. The maintenance operations are more efficient and planning is easier due to forecasting of the maintenance needs by utilizing the condition monitoring methods. As the sacrifices in the strategic values is lost independency and tight cooperation with single supplier. The crew does not have freedom in planning the maintenance a way they feel is the best for them. Tight cooperation with the supplier effects on personal level between the companies. Table 8 below illustrates the value elements for the personal level of cooperation.

Table 8. Personal / Social value elements for the customer.

Personal / social value elements	
Benefits	**Sacrifices**
More communication with the supplier and deeper relationship with the dedicated contact persons, which lowers threshold to be in contact Get access to the technical experts in regular basis and when needed Communication in pleasant situation instead of stressful emergency situation	Loose connection to on-site engineers, due to the telephone support to the support center Loose skills to troubleshoot and fix independently without external support If the service is not sold to every level in the customer's organization it creates resistance to get accepted

As seen in Table 8, in Personal /social value elements, the communication between the companies is improved when the Remote Service is in use. Even if the service engineers visit onboard less the communication is improved by utilizing IT Infrastructures such as telephone, chatting and emails. The access for the specialists in the Service Center is easy and even the smallest question gets answered. As the sacrifices in personal level are lost connection to the service engineer that used to visit regularly onboard, the crew gets lazy and use the Remote Service to troubleshoot problems that they used to do themselves earlier.

6.4 Value Propositions for the Case Company

The following Value Propositions are constructed to be used internally in the case company to promote the Remote Services in the System and the Service Units. The Value Propositions are proposed to be used in the strategy review to realize the value of the Remote Services for the case company. Table 9 below shows the proposed Value Propositions for the value element of Economic values.

Table 9. Economic value elements for the case company.

Economic value elements	
Benefits	**Sacrifices**
Revenue from annual fee and installation of additional hardware and software Cost savings in warranty period due to reduced travelling and efficient trouble-shooting Higher margins than from transactional maintenance jobs Troubleshooting is done in an office and the service engineers do not need to spend time in travelling, but in real jobs providing better utilization rate	Lost emergency repairs, basic maintenance and spare part sales for repair Extended life time of equipment reduce modernization needs Training of personnel Investment in equipment and development

As seen in Table 9, in Economic value elements, the values are related to increased revenue and reduced warranty costs. The Remote Services provide also higher margins due to skills based nature and good utilization of technology. When the trouble-shooting is done in the office the service engineers do not need to travel to the vessel in every case. As the sacrifices to benefit from the Economic elements is reduced emergency repairs and related spare part sales. The life time of the equipment is also increased due to better maintenance and lowered risk due to the technical support. In skills based business the people are needed to be trained and competent what requires investment to education. But high competence level can be used also in engineering to develop and engineer better products and services. Table 10 below illustrates the values in product and service level.

Table 10. Product / Service value elements for the case company.

Product / Service value elements	
Benefits	**Sacrifices**
In warranty phase the product value is higher due to better access and knowledge of operation and use of the system Equipment knowledge increase due to data collection	Development of services and related hardware and software Infrastructure in the products to support remote services In system sales the equipment requires more space and cabling that is needed to design and install

As seen in Table 10, Product / Service value elements, the benefits of having the Remote Service enabled the products to provide high value in the warranty phase. The System Unit can use the Remote Services without a cost to troubleshoot the failure cases remotely, instead of sending the service engineer onboard. Thus, the warranty cost can be reduced and the profit level increases. On the sacrifices, it is maintenance of the infrastructure to allow the use of the Remote Services. In the sales of the system packages, the hardware needed for the Remote Services require space and need to be engineered to fit into the package. Strategically, the product and the service are better with the Remote Services. Table 11 below illustrates the Strategic value elements.

Table 11. Strategic value elements for the case company.

Strategic value elements	
Benefits	**Sacrifices**
Knowledge of products in their operational environment increase Improved relationship provides opportunities for future product sales Opens doors to higher level in customers' organizations	In order to win the first contracts and to get references there is need for pilot cases Remote Service Agreement includes obligations to respond in an agreed time which engages engineers

Strategic value elements	
With Remote Service agreement the customer is engaged to the case company for longer time	

As seen in Table 119, Strategic value elements, the benefits on strategic level include the increased knowledge about the System package in operation and getting access to the higher level in the customers' organizations. The improved relationships make further sales easier and when the connections to the high level in the customers' organization are utilized properly, even new system packages are easier to sell. The Remote Service agreements are difficult to sell as the sacrifice might require a pilot installation for the case company's cost. In the Remote Service Agreement, it is promised that a certain response time will be maintained which obligates the case company to provide the service within this promised time.

With good personal relationship to the customers' side, further business is easier and the sales can improve. Table 12 below illustrates the Personal / Social value elements.

Table 12. Personal / Social value elements for the case company.

Personal / Social value elements	
Benefits	**Sacrifices**
Continuous discussion with the customer in pleasant situation rather than solving negative emergency issues Deeper relationship and better customer knowledge Trust due to quick resolution of the problems	Discussion partner is on operational level rather than on management level If the service is not productized and trained for every people involved in engineering and delivery people get frustrated

As seen in Table 12, Personal / Social value elements, the identified benefits are related to the improved communication, through pleasant discussions instead of fighting and arguing in the emergency situation when the failure has already happened. When the failures are solved quickly, it gives a professional image for the engineer, and the customers can feel the skills based service strategy in effect. In the sacrifices, the dis-

cussion level might get lower in the organizational hierarchy, and happen between operational persons and the support engineers. If the service is not productized and the engineers are not well trained, they can get frustrated when the customers ask questions they are not competent to answer.

In order to get the benefits from the Value Propositions presented above, they need to be utilized in the everyday use and to be clearly communicated to the customers.

6.5 Use of the Value Proposition

As the final point in the proposals for the use of the Value Propositions, it is suggested that the Value Propositions become visible and utilized in the marketing material and advertisements to illustrate the benefits of the Remote Services. To get the maximum out of the Value Propositions, the sacrifices need to minimized to both to the customer and to the case company. Table 13 below shows the key points of the Value Propositions reflected in the use through various means and channels.

Table 13. Use of the Value Propositions.

Use of the Value Propositions	
Means and channels	**Use**
Marketing material	Repeat the values identified for the specific market area and provide transparent calculations to justify the values in monetary terms
Sales speeches	In the sales meetings practice the Value Based Selling Methods ane communicate and demonstrate the values for the customers
System sales	Use the Value Propositions to promote the system packages enhanced with the Remote Service enablers
Advertisements	Use the value propositions consistently and in connection the Service and to the System packages

As described in Table 13, Use of the Value Propositions, the values identified in the study can be used in several situations and for using various means and channels to promote the remote services. In marketing material, the values are proposed to be visible as statements described and justified with calculations and demonstrations. In the sale speeches, the suggested Value Propositions can be used to promote the Remote Service alone, but also to promote the System package with additional operational values. In the advertising material, the Value Propositions can be used consistently in short terms. The Value Propositions can also be used in the Service and System promotions to create a message of one integrated package – the System package and the life time services.

7 Discussion and Conclusions

This section discusses and summarizes the results of the study. First, it presents the summary and discusses the practical and managerial implications for the case company if it decides to put the proposals into practice. Secondly, it evaluates the results and the validity and reliability of the study.

7.1 Summary

This study was initiated by the need to improve service sales in the Service unit. The need for the study was also increased by the internal achievements in some units which managed to conduct remote service sales in their fields. For example, at the time when the study was initiated, the System unit for Oil and Gas industry already used the Remote Services in several vessel types, but in the Cruise industry and its System unit such services were not yet offered. It was assumed that the customers in the Cruise ad Ferry segment would value the same benefits and would also purchase the Remote Services. In the System Unit for Cruise and Ferry, it was however realized that the unit was not currently ready to install and sell the service enablers needed for the Remote Services. Additionally, the sales of the Remote Services in the Service unit were also realized as being quite challenging. The conclusion was that System and the Service Unit in the Cruise and Ferry segment are required to yet develop the necessary operations to enable the Remote Services. To address these needs, this study was conducted.

The study utilized qualitative research methods and concentrated on the value propositions as statements and descriptions, rather than monetary values, due to the limited quantitative data available. Data collection was done by interviewing a selection of carefully chosen persons in the System and the Service Units. The selected people come daily in connection with the customers and they have long experience in the marine industry, especially from the Cruise segment, thus allowing for reliable insights in their opinions and suggestions. The study would have been even more valid if the customers were interviewed, but that was not possible to undertake in sufficient depths in the given time frame. Thus, the study relies on the extensive knowledge of the case company experts representing the supplier side.

The data collection and analyze were also geared to reflect a broad theoretical literature review related of the topic of service and service selling in the system organization, with the value based selling gaining special attention tin the theoretical analysis. The interviews were subsequently based on the theoretical framework, as well as the results of the current state analysis in the case company, thus grounding the outcomes in the case company context.

The outcomes of the study are the proposals, first, for the System and the Service Units to develop the strategy in order to allow for more cooperation in the development and sales of the Remote Services. Secondly, the outcomes include the Value Propositions which are suggested for use in the sales to the customers and internally in the organization. The proposed strategy implications call for a deeper cooperation between the units and for the development of a common approach to improve the Service business. The proposed value model also provides a tool and argumentation in order to sell the service to the customers and internally to the System Unit. The results of the study confirm that the studied services could offer a considerable value, not only to the customer, but also to the System Unit.

For further development of the study results, it is recommended to measure the Value Propositions with the customers and develop it further accordingly. The study was made without the customers and is not as valid as it could have been if the customers were involved. To enhance the Value Propositions, their monetary values also need to be evaluated and the possibilities to measure them developed. The best Value Propositions are those with the monetary values and a good possibility to measure to justify the results.

The next step for the case company is to utilize the proposed actions by translating them into the strategy and in the sales. This utilization also requires considering the related practical and managerial implications. Some of them are suggested as an initial point for staring this discussion in the sub-section below.

7.2 Practical Implications

The practical implications for the organization, if the case company decides to start the implementation of the proposals from this study, imply first of all the change in the co-

operation between the System and the Service Units. The System unit is asked to install the hardware and software required for the Remote Service as part of the system package integration. The Service Unit has to support the System engineering to install the correct hardware and to provide support in the sales phase in order to ensure the Remote Service agreements get signed already in early phase of the ships' operations. Thus, these units need close cooperation for the remote service to be successful as the main practical implication for the case company.

When such cooperation is established, the Service Unit can take the proposed Value Propositions in use in the sales and argumentation of the Remote Services.

7.3 Managerial Implications

The key suggestion for the management level, based on the results of the study, could be to review the strategy from the service point of view to ensure its equal importance in the business along with the product sales. The responsible persons in the System and the Service Units will then need to agree on the approach to the service.

Due to the fact that the Remote Service enablers cost for the System Unit to install, the management has to make decision how to cover this cost. Since one of the values for the case company is savings in the warranty phase, the System Unit could install the needed enablers for the cost of the project and save the money in utilizing the services. The Service Unit could then provide the support for the warranty department in use of the Remote Services.

The sales of the Remote Services will need to be considered as a common effort, since it was proposed in the values that the services has to be sold on different levels in the customers organization. The sales of the System Unit can use the benefits of the Remote Services to support the sales of the system packages. The sales of the Service Unit can use the same benefits to sell the related service package to the operator.

For the competence management, the plan is proposed to include mapping and competence planning for the competences needed to design and sell the Remote Services. The engineers have to maintain the skill level and learn the skills needed to manage the Remote Services in the System package design and in use of the systems. For the

sales people, it is needed to add Value Based selling skills as well as the overall business skills related to the customers' business environment.

7.4 Evaluation

Internal validity of the study can be considered as addressed in the study. For example, it was increased by the results of the study concentrating on the precise response to the original objective of the study. The proposals were specially steered to connected to the objective of the study and provide a focused solution to the business problem identified for the study. The process of data collection was also design to address the need to enhance internal validity of the study. The questionnaire used in the interviews had a number of questions and a reasonable time was spent with the interviewees to obtain valid responses. A considerable amount of the data was collected on the topic of the study to ensure that enough data is available to approach the topic and get valid interpretations. However, due to the current limitations in the customer relationships the customers were not available for the interviews in the short notice allowed by the study process, thus affecting the validity of the results.

Construct Validity can also be considered as addressed, but lacking in extent of the theoretical literature. The theory analysis was based on selected sources and is not extensively compared to the theory across the fields and from other sectors. On the other hand, to back the validity and the reliability of the study, the interviews were constructed strictly based on the theoretical literature findings and recommendations.

External Validity can be considered as enhanced by careful selection of the representatives with extensive experience from the industry. The results of the study are rather generic and can be generalized to develop the Value Propositions to the Remote Services also in some another organization, in the same field of the industry.

Reliability of the study can be considered as based exclusively on the qualitative results, since the monetary data was not available from reliable sources and was left out of the study. In the interviews, the questions were asked as they are, not forcing the interviewees to reply to the question as per their best knowledge. The data collected can be considered as valid since the interpretations were carefully considered by the researcher, and grounded in his extensive experience in the field. The first data set collected from the interviews and summarized was discussed in-depths by the repre-

sentatives in the organization before building the final proposal. The final proposal was once more carefully discussed involving the people who confirmed their interpretations to be understood and recorded correctly. Thus, the study allows for replication of the study process since special efforts were made to ensure the logical sequence and stuffiest argumentation behind the choices, interview selections, and finding from the relevant literature, also supported by following strictly the research process of the study. But since only one method, qualitative interviews, was used to collect the data for the study, it affected *Reliability* of the study.

Finally, *Generalization* of the results is possible with the given limitations, such as the same industry, the same services, and the same experience from the same industry. Having these limitation addressed, the same results could be obtained if the study were conducted by different study methods and by a different researcher.

In order to improve the reliability and validity of the study, it is proposed to arrange further research with a deeper search and with the target to interview the vessel operators and to collect monetary values for the Value Propositions.

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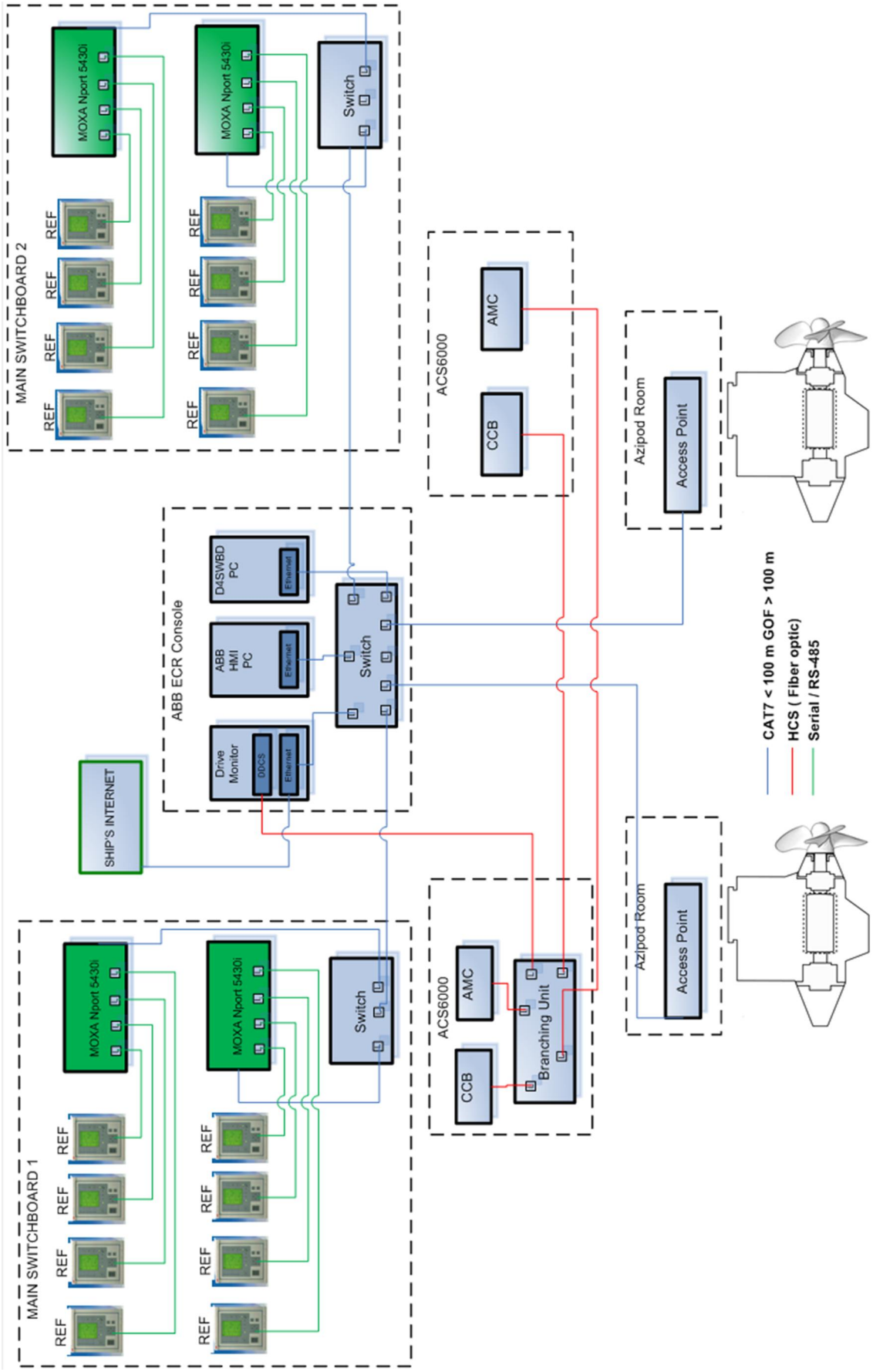
Appendix 1. Remote Diagnostic System topology



Appendix 2. Study interview - example of field notes

Study Interview (Discussion)

TOPIC: Values in Remote Diagnostic and Condition monitoring services

Information about the informant (Interview x)

Table 1

Position details	xx
Name (code) of the informant	xx
Position in the case company	xx
Date of the interview	dd mmmm yyyy – In country
Duration of the interview	1 h
Document	Field notes

Field notes (Interview x)

Table 2

	Topic(s) of the interview	QUESTIONS	FIELD NOTES
0	Describe experiences in view of the topic problem	What is your background in the industry and case company?	
1	Current value proposition	What is the value proposition for the services discussed?	Reduced downtime, unlimited and easy technical support, easier troubleshooting Condition monitoring improves and reduces planned maintenance
2	Current value proposition	How the value proposition is constructed for the services discussed?	The idea was introduced by owner of FPSO vessel located in the Gulf of Mexico, because they wanted to have remote troubleshooting in their system. The CUSTOMER gave the values to CASE COMPANY.
3	To see if the service innovation sensing is used in new service product development.	Were you involved or asked for opinion of the CUSTOMER needs and expectations when the remote services were developed.	No, it was before my time.

	Topic(s) of the interview	QUESTIONS	FIELD NOTES
4	Competition	Who are competitors for the services discussed	Competition is difficult to develop due to OEMs' limitation to the available data. It is possible to do, but it is not necessarily feasible to do it. CM is different because it is easier to do and methods are commonly known. For rotating machines classes set rules for CM, but for Electrical side there are not rules. For CM there are many competitors, like Karsten Moholt. For RDS there is not competition.
5	Visibility of the service in the company's strategy	Identify if the company has focus on product sales, in service sales or it is combination.	Focus has been on product sales, but the direction is more to service sales. It has been recognized that the new sales needs the service promise when they sell new systems. Service sales need HW from the product sales to be able to sell services in future. In the new building specifications there are more and more requirements for support services, like RDS and CM.
6	Are people aware of importance of the service business	Why the service would be important for the business?	As part of a change in Marine environment to more sophisticated technology the local small service providers are not capable to do maintenance anymore. Also demand to keep the vessel operating globally provides service opportunities to global suppliers. Many failures lead to situation where the owner is required to get a statement from the OEM to justify the root cause to the failure. This supporting role is turning to be a business with solutions like RDS and CM.
7	Internal competition between new sales and service	Do you see internal competition between new sales and service sales?	Not in Norway, due to organization structure. Responsibility is transferred to the Service as soon as the vessel is ready for delivery. In Finland yes, due to the vessel belongs to new sales until end of the warranty period. Failure cases create troubles, when the new sales as opportunity at the same time.
8	Level of tailor made service offering	Do you run service business transactional way with standardized services or provide tailored skill based services?	Skilled and competent services, like RDS requires the competence of the real situations onboard the vessels to understand the whole chain of products installed. Technical support requires understanding the products as well as the CUSTOMER's environment. People have used to make commissioning to very same vessels they support.
9	Awareness of CUSTOMERs' expectations	Are CUSTOMERs interested of the service when they buy system delivery?	Yes they are. The vessel purchasers generalize and make generic specifications that do not address service. The operators are keen to get the service support, because they suffer in the end if the vessel does not deliver what was promised.

	Topic(s) of the interview	QUESTIONS	FIELD NOTES
10	Experience of service demand	In your experience do CUSTOMERs want to cooperate in the service after they have bought system delivery?	Yes, very much. Remote services link the CUSTOMER to the supplier, due to interactive connections. The supplier connects to the vessel even when there is not specific problem to fix. Increases face time with the CUSTOMER.
	Relationship – Specific question for CUSTOMER	What is a level of relationship with CASE COMPANY?	
11	What values different stakeholders get from using the remote diagnostic system and the remote condition monitoring services	A. Service department B. New sales department C. CUSTOMER D. Ship Yard E. Warranty department	Based in interview's position one of the option is selected and the questions below asked understanding the focus area. Choose one: A
12	What is the cost of investment for the stakeholders from installing the remote diagnostic system and the remote condition monitoring systems	A. Service department B. New sales department C. CUSTOMER D. Ship Yard E. Warranty department	Based in interview's position one of the option is selected and the questions below asked understanding the focus area. Choose one: A

	Topic(s) of the interview	QUESTIONS	FIELD NOTES
11.1	Economic value elements - Benefits	What kind of economic values do you get in using the RDS and CBM services delivered by CASE COMPANY, to the electrical system?	CUSTOMER: Insurance and survey cost reduction More operating days due to less days in inspection and maintenance Reduced downtime As part of integrated operation center the crew can be reduced. There are a lot of personnel costs, due to requirements of using local engineers. 250kEUR per person to train new engineer in O&G. No need to pay travel costs. Availability of engineers is better, due to less travelling. CASE COMPANY: Investment price and annual fee. Sell engineers to another job when the troubleshooting is done in the office. Efficiency of the engineer utilization.
11.1		What is monetary value of mentioned benefits?	20%-25% reduction in total cost of ownership (Value from Kenneth) Crew position requires nearly 1,5MEUR and 6 people due to shifts, in Drilling ships
12.1	Economic value elements - Sacrifices	What kind of economic sacrifices do you make in using the RDS and CBM services delivered by CASE COMPANY, to the electrical system?	CUSTOMER: Pay the HW and SW as investment Pay annual fee CASE COMPANY: Loose revenue in On-call cases Loose revenue in basic maintenance
12.1		What is monetary value of mentioned sacrifices?	Investment cost 600kUSD full scope, turnkey solution Annual fee per vessel class 48kUSD
11.2	Product / service value elements - Benefits	What kind of product and service related benefits do you get in using the RDS and CBM services delivered by CASE COMPANY, to the electrical system?	CUSTOMER: Service is better due to better alarm and fault recognition before selecting the service engineer and spare parts and tools Improved products by utilizing the data in R&D phase, and by better records of the failures. CASE COMPANY: Equipment knowledge improves due to data collection

	Topic(s) of the interview	QUESTIONS	FIELD NOTES
11.2		What is monetary value of mentioned benefits?	Cost of sending wrong engineer is about 10kUSD
12.2	Product / service value elements - Sacrifices	What kind of product and service related sacrifices do you make in using the RDS and CBM services delivered by CASE COMPANY, to the electrical system?	CUSTOMER: IT maintenance, but it is paid in the annual fee CASE COMPANY: Engineering of the system to be fitted Prepare IT all the way from the equipment into the control room
12.2		What is monetary value of mentioned sacrifices?	50 hours of engineering for CASE COMPANY 3-4 days of commissioning for CASE COMPANY
11.3	Strategic value elements - Benefits	What kind of operational strategy related benefits do you get in using the RDS and CBM services delivered by CASE COMPANY, to the electrical system?	CUSTOMER: Decision support tool for planning and forecasting maintenance to fit into the operational schedule. Better knowledge about the system situation. Can order spare parts in time, but closer to the maintenance. The crew can contact directly to the specialist instead of earlier support channel through superintendent. Reduce time needed for resolution and the superintendent can do something else. No need for so many competent people. CASE COMPANY: Can plan resources better to fit into the maintenance schedules, instead of doing planned maintenance in firefighting mode. More time spent with the CUSTOMER.
11.3		What is monetary value of mentioned benefits?	Not possible to say For CASE COMPANY earlier key accounts were supporting vessels, but now the person is not anymore the link. The key account can manage more vessels – reduce need for headcount.

	Topic(s) of the interview	QUESTIONS	FIELD NOTES
12.3	Strategic value elements - Sacrifices	What kind of operational strategy related sacrifices do you make in using the RDS and CBM services delivered by CASE COMPANY, to the electrical system?	CUSTOMER: Loose independency due to long term agreements Vessel crew loose privacy due to better benchmarking between vessels. The office knows exactly what is happening in every vessel. CASE COMPANY Commitment to respond within given time. Contractual obligations to respond. Service Engineer is needed to be available to respond to the contractual obligations
12.3		What is monetary value of mentioned sacrifices?	
11.4	Personal value elements - Benefits	What kind of personal and social relationship related benefits do you get in using the RDS and CBM services delivered by CASE COMPANY, to the electrical system?	CUSTOMER: Should have more discussions with the technical support personnel. Connection between people is on different level due to direct contact to the duty engineer, who used to be service engineer. CASE COMPANY: More face time, more opportunities, and better relationships due to more discussions in difficult situations. No money issues discussed when under agreement. Quick resolution helps to build reputation.
11.4		What is monetary value of mentioned benefits?	Good relationship leads to chance to sell new equipment.
12.4	Personal value elements - Sacrifices	What kind of personal and social relationship related sacrifices do you make in using the RDS and CBM services delivered by CASE COMPANY, to the electrical system?	CUSTOMER: Confidence of operational reliability. Relay on equipment and service and loose ability to fix independently. CASE COMPANY: Loose connection to superintendent who can support to get service sales through. Requires another person to speak with.
12.4		What is monetary value of mentioned sacrifices?	

Appendix 3. Example of the interview data handling

#	Role	Item	Answer	Summary of answers
1	Service Sales	Value proposition	Does not know	Value proposition is not clear for anyone Interviewees constructed the proposition during the interview, instead of telling the official and published value proposition Reduced risk, reduced down time, reduced maintenance costs, easier and faster trouble-shooting, improved safety and reliability due to condition monitoring
2	Service Sales	Value proposition	Less downtime and quick resolution on issues and reduction of travel costs Reduction of maintenance cost by CBM	
3	Service Sales	Value proposition	Reduced downtime, unlimited and easy technical support, easier troubleshooting Condition monitoring improves and reduces planned maintenance	
4	Service Sales	Value proposition	Avoid catastrophic failure Reduce risk Improve safety and reliability	
5	Product sales	Value proposition	The product or service is not ready yet. Technically it might be ready but the sales material is lacking. To be able to sell the product there are needed support material. Values, product itself and services are unclear, because of lack of material. In oil and gas business risks are not allowed, while in the cruise business risks are allowed but they must be manageable. Failure of essential equipment in an oil rig leads to immediate off-hire, but in the cruise redundancy is used to manage the risk and to continue operation.	System sales people think more the customers' operations and business than situation of resovling problems. Safety for operations is crucial, but not that important than in oil and gas industry, where the remote solutions were developed originally.
6	Product sales	Value proposition	Safe operations Safe and uninterruptable operation, with professional 24/7 support	
7	Product sales	Value proposition		
1	Service Sales	Value proposition construction	Does not know, not enough experience from the specific business. Was not in the company in that time.	People do not know how the value proposition was constructed, if it was at all

#	Role	Item	Answer	Summary of answers
2	Service Sales	Value proposition construction	Do not know, common sense In Wärtsilä yes, for condition based maintenance part	Nobody has been involved in the construction of the value proposition, but it was recognized by the customers themselves.
3	Service Sales	Value proposition construction	The idea was introduced by owner of FPSO vessel located in the Gulf of Mexico, because they wanted to have remote troubleshooting in their system. The customer gave the values to us. No, it was before my time.	
4	Service Sales	Value proposition construction	Difficult to answer Process was missing, but was realized after the service was developed. Why do we want to do this? If we collect and control the data we could provide service to prevent failures and extent life cycle. Yes, I was. Everybody in front end somehow involved in creating value propositions. Like during full service time for fuel stations and production lines.	
5	Product sales	Value proposition construction	I was not involved	Not involved
6	Product sales	Value proposition construction	No idea	
7	Product sales	Value proposition construction		
1	Service Sales	Competition	We do not have competition when we focus only on our own installed base.	Competition exists, but it is consentrated on the Condition Monitoring rather than on Remote Diagnostic Services
2	Service Sales	Competition	RDS not CM is SKF, Karsten Moholt, Others have for their own products	

#	Role	Item	Answer	Summary of answers
3	Service Sales	Competition	Competition is difficult to develop due to OEMs' limitation to the available data. It is possible to do, but it is not necessarily feasible to do it. CM is different because it is easier to do and methods are commonly known. For rotating machines classes set rules for CM, but for Electrical side there are not rules. For CM there are many competitors, like Karsten Moholt. For RDS there is not competition.	Karsten Moholt was mentioned the most, but the others are small players
4	Service Sales	Competition	Downing mills, R&B, Karsten Moholt is the number one, National Oil Well,	
5	Product sales	Competition	All system providers have similari products and services, or at least everyone claims that they have. RDS should have open communication methods and easy to be connected to other systems onboard. The data format must be open. The value of the service is in the data it collects and in utilization of the collected data. GE has an integrated system where all components communicate with each other.	In general the system providers in the Marine industry have similar services, even though it was suspected that the services are not ready to deliver but more for marketing.
6	Product sales	Competition	No idea No information from the competitors, but in general expectation is that everyone has it.	
7	Product sales	Competition		

Appendix 4. Summary of the Value proposition data

Customers' desired benefits and sacrifices

Personal / social value elements	
Benefits	**Sacrifices**
More communication with supplier and deeper relationship with contact persons Get connection to technical experts in regular basis Communication in pleasant situation instead of stressful emergency situation More frequent cooperation and communication lowers threshold to be in contact In overall easy service makes everyone happier and life easier	More time is spent with the supplier Loose connection to on-site engineer, due to telephone support Loose skills to troubleshoot and fix independently If the service is not sold to every level in the customer's organization it creates resistance to get accepted Former superintendent – supplier relationship is lost, due to shorter route from the vessel to supplier

Strategic value elements	
Benefits	**Sacrifices**
Reduced risk level Efficient and better planned operations Technical support directly to the vessel, faster and utilize the crew better, giving them opportunity to learn Like insurance for failure cases With service agreement the bureaucracy is reduced The right engineer is utilized to resolve the problem	Loose independency to decide maintenance and needed actions due to transparency of equipment condition The crew loose freedom due to possibilities to benchmark operations between vessels

Product / service value elements	
Benefits	**Sacrifices**
Better predictability of operations and failures Improved technical support for operator Optimized and more efficient maintenance planning Automated monitoring and reporting of condition of the system gives transparency Troubleshooting is cheaper and faster and specialists are better available	Not really any sacrifices, the product and service get simply better

Economic value elements	
Benefits	**Sacrifices**

Reduced downtime in case of failure Extended life time due to proper condition measures Possibility for insurance and annual survey costs due to continuous monitoring of equipment Possibility to reduce number of crew members Less travel costs due to remote support Risk preventions and safer operations Failure situation can be identified properly and right spare parts and competent service engineer provided to the customer. Quick resolving of the problems result in less interruption of operations	Economic sacrifices are investment to the hardware and software and annual fee for the service

Case company's desired benefits and sacrifices

Personal / social value elements	
Benefits	**Sacrifices**
Continuous discussion with the customer in pleasant situation rather than solving negative emergency issues Deeper relationship and better customer knowledge Possibilities for new opportunities in product and service sales Trust due to quick resolution of the problems Easier to get new customers when the existing ones are happy and messages are positive	More time is needed to spend with the customer in discussing and reporting Discussion partner is on operational level rather than on management level If the service is not productized and trained for every people involved in engineering and delivery people get frustrated

Strategic value elements	
Benefits	**Sacrifices**
Easier resourcing of engineer due to knowledge of equipment condition Knowledge of products in their operational environment increase Improved relationship provides opportunities for future product sales Opens doors to higher level in customers' organizations When fleet wide solutions are utilized the customer is engaged to case company for longer time	In order to win the first contracts and to get references there is need for pilot cases RDS service includes obligation to respond in an agreed time which engages engineers Discussions in high level in customer organization creates expectations that must be fulfilled

Product / service value elements	
Benefits	**Sacrifices**
Decreased warranty costs due to easier resolution of problems during warranty period Equipment knowledge increase due to data collection In warranty phase the product value is higher due to better access and knowledge of operation and use of the system	Development of services and related hardware and software Infrastructure in the products to support remote services In system sales the equipment requires more space and cabling that is needed to design and install

Economic value elements	
Benefits	**Sacrifices**
Revenue from annual fee and installation of additional hardware and software Higher margins than traditional maintenance work Troubleshooting is done in an office allowing more efficient use of engineers Efficient use of engineers when they do not need to spend time in travelling, but in real jobs More efficient operation of the organization Better utilization of the service engineers during warranty period	Lost emergency repairs, basic maintenance and spare part sales for repair Extended life time of equipment reduce modernization needs People are not able to explain what the system does and what it is, requiring effort to learn and uncomfortable situation Training of own personnel Investment in equipment and development